PATENTS FOR HITLER

by

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With an Introduction by

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INTRODUCTION

SINCE THE middle 'thirties, whenever a German business group wanted to make an agreement with any business concern beyond the borders of Germany, it was required first to submit a full text of the proposed agreement to the Reichsbank. The Reichsbank rejected or re-wrote until the agreement met its approval. The Reichsbank approved no agreement which did not fit into the plans of the Nazi State and carry that State another step towards its goal of world domination.

In other words, any American firm which reached an agreement or dealt with a German firm during the latter 'thirties was dealing, wittingly or unwittingly, with Hitler himself. When an agreement was reached, it was reached on Hitler's terms—otherwise there was no agreement or no trade, for the Reichsbank forbade the German firm to sign the agreement or transact business. American firms found a place in Hitler's plans, or else they stood alone against the powerful world cartels the Germans came to control, doing no business with Germany at all.

In this fashion, before Hitler's diplomatic war began to spread his political dominion over neighbouring states (by annexations or by weakening them in preparation for military conquest), and long before Americans were dreaming of military war, Hitler was waging economic warfare. Now it is becoming clear that his economic, diplomatic and military war are all elements in one co-ordinated drive for world control—all of them clear, ruthless and evil in similar ways.

It is clear now that his economic war, like his diplomatic war and his military war, netted him many victories, either winning him allies or weakening a future enemy—there is no such thing as a neutral to the Nazi mind.

From hearings before the Senate Patents Committee, the Truman Committee and other Congressional Investigating Committees, and from information from the files of the Antitrust Division of the Department of Justice, we are getting a picture of Hitler's economic victories in America.

For those busy souls who have not the time to read through

the dozens or so volumes of hearings to digest the original material, this book will help make clear the picture we are beginning to see, will describe how Hitler waged his economic war in America—winning or duping corporations here, weakening this country as far as possible for conquest by diplomatic or military war when the time would come that we should oppose Germany.

In this book, a former German economist, once widely known in the country of his nationality as a student of cartels and cartel practice, interprets some of the things we are hearing about, the meaning of those victories in the light of a knowledge of German cartel structure and an interest which he brought with him when such inquiring minds as his were driven from Germany to clear the way for Hitler's Juggernaut at home.

Here he discusses and explains the methods, weapons and objectives of Hitler's economic war. Americans generally understand as little of modern economic warfare as they understood of blitzkrieg methods, weapons and objectives when Hitler descended on Poland. They must learn modern economic warfare—how to defend and how to attack against Hitler's weapons—as they are learning mechanized military warfare. And they must learn quickly if we are not to perish. Reimann's book can help us to learn.

CREEKMORE FATH

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CHAPTER I

HITLER'S SECRET WEAPON

WHEN ADOLF HITLER stood poised upon the brink of the adventure that was to make him ruler of most of Europe and bring him closer to world dominion than mortal man had ever been before, he counted upon a secret weapon of which the world had little suspicion. It was not a fearful death-ray, a motorless plane drawing its power by wireless, or a mysterious poison gas of unparalleled deadliness.

The secret weapon of the Third Reich consisted of the spider web of cartels, patent exchanges, licensing arrangements, divisions of territory, etc., concluded between German industrial concerns and those of other nations, most notably with American corporations—agreements which were cunningly devised to develop in Germany the new synthetic industries on which total war depends, and to stifle or limit the output of these same industries in other countries. In following this policy German corporations were allowed and even encouraged to ally themselves with foreign, particularly American companies. The latter often accepted Nazi aid in order to obtain monopolist control over strategic industries in America.

If, at the time of the attack on Pearl Harbour and the loss of America's source of raw rubber in the East Indies, we found ourselves without preparations for a synthetic-rubber industry (but with a paper claim on patents), the reason for this is easily found in an international arrangement that gave to this country a document and hypothetical profits in the future, and to Hitler an expanded and fortified synthetic-rubber industry in the present. If, when the United States entered the war, it found a large armament plant "honour bound" not to sell certain of its products to the British Empire, if it discovered that another plant had furnished data which enabled the German General Staff to keep an accurate check on the United States' naval and air corps expansion, if it found itself with inadequate sources of the light metals without which an air force is impossible—all these handicaps can be traced to commercial arrangements of this same type.

These agreements produced other strange phenomena. Thus we find that important secrets concerning the production of synthetic rubber were actually revealed to Nazi Germany, though they were concealed from the U.S. Navy Department. And—perhaps most surprising of all—at the time of Pearl Harbour royalties on aviation gasoline *sold to the R.A.F.* were to be put aside to be paid to the giant German concern, I. G. Farben, after the war.

Some of these agreements antedated the Nazi regime, but all of them were expanded, modified, twisted under the prodding of Nazi officialdom. Did American industrialists, caught in this web, realize that they were dealing with no mere private concerns like their own, but also with the German government itself? There is enough evidence to prove that at least some of them knew that their contracts with Nazi corporations were subject to decisions of the government of the Third Reich, which used these corporation deals for its own strategic purposes.

The Americans who negotiated these agreements, supposedly only with German industrialists but also—because even in pre-war Nazi Germany industry was state regimented—with the German government itself, were not fiends in human form. They were simply businessmen who were seeking to "fortify their competitive position" by taking advantage of the existing patent situation in this country—which we shall examine later. By these "arrangements" with Berlin they were both buying off German competition here and entrenching themselves against attack by rival American corporations in the same or in adjacent fields. Thus the development of new strategic industries came under the control of corporations whose monopoly power depended on international co-operation with Nazi enterprises.

What the reader must realize is that *there was nothing short-sighted about the Nazi policy.* When a German corporation signed a contract, the hand of the state guided the pen; no German company was permitted to gain a commercial benefit at the expense of the interest of the state. Thus many of these agreements eventually worked out so that the Third Reich received *production*, while the American corporation obtained *rights* that often proved to be illusory.

The Nazi leaders have been particularly shrewd in utilizing the mythology of capitalism through the Reichsbank, the international cartels, and individual corporation agreements in their struggle for world rule. They took advantage of potent cartel agreements

in economic warfare—keeping their own efforts bent on strategic production at home, and thus strengthening their military position.

Hitler apparently was counting on more than the mere agreements with these American (and other) corporations which operated to limit essential war production here. He actually looked on American industrialists bound to him by such ties as allies who could be depended upon to support and to insist upon a policy of appeasement. Not only could these corporations look forward to the crumbs from Hitler's victory banquet, but they could be depended upon to see that *war against Hitler would not pay*. At the best a victorious war would reduce their German counterparts to the position of junior partners, holding perhaps 49 per cent of the stock in their joint enterprise. Was it not wiser to avoid the risks and the inevitable losses of war, and accept the junior share of 49 per cent that the German executives were willing to offer?

So confident was Hitler that businessmen would regard another world war as a bad investment that his calculations indicated that England would not fight and America would not arm; even after the war was in its second year he ventured to scold Winston Churchill for not understanding England's "true" interests. And long after he had given up hope of educating Mr. Churchill in an understanding of this "error", he continued to base his plans upon the assumption that the appeasement forces in this country were too strong to be overcome.

Did these American industrialists *want* Hitler to win? It is impossible to discuss here the ramifications of business, politics and psychology, and the answer to that question does not properly lie within the scope of this work. Yet it may be pertinent to point to one rather obvious consideration. If a corporation executive was convinced that Hitler would inevitably conquer, the sooner the end was reached and the sooner world trade was "stabilized" the better for all concerned—and especially for those who had been canny enough to throw an anchor to windward and to appease the Nazis *before* their victory, rather than having to approach them hat (and cheque-book) in hand when they were flushed with triumph. Heroics and modern business methods do not mix; a corporation executive is not supposed to deal with moral imponderables, but vigilantly to seek every lawful advantage for his stockholders. In the new decalogue of industry the first and most important rule is *not to bet on the wrong horse.*

For corporation officials who commit this grievous sin there is no atonement short of (official) death.

The author is quite ready to believe that none of these industrialists wilfully and knowingly violated this principle. There is, therefore, a touch of synthetic pathos to the fact that, as becomes increasingly apparent, Hitler's business associates here emphatically did bet on the wrong horse; they put their stake on a gelding that started with a great burst of speed, but that very patently lacks the stamina to win the race.

Adolf Hitler's calculations were ultimately wrong. His error was that he did not and could not comprehend the forces which would rise against him in the world. His judgment of the corporation executives with whom he dealt was not at fault, but he overestimated the influence they would be able to wield. For the simple truth is that from the German invasion of Poland until Japanese planes roared over Pearl Harbour—and in some cases since then —a great many American industrialists acted upon the tacit assumption that the war was over, that Hitler had been completely victorious and was master of Europe (and beyond), and that business prudence dictated acknowledgment of his international supremacy as a *fait accompli*.

"*Mystery Plants*" *and Patent Monopolists*

There was nothing really original in what the German war plants were secretly doing. Synthetics are not the invention of any one individual or nation. Scientists in many countries were working on the problem of breaking down natural products into molecules and atoms, and reassembling the atoms in divers combinations to produce new materials. On an international scale, scientists and professional inventors formerly learned from each other. The discovery of a new process or an improvement upon an old technique inspired research students the world over, with the result that the same physical and chemical principles were applied in nearly the same way in many countries simultaneously. Careful research organized on a large scale, experimentation in laboratories and pilot plants, made it possible to find out whether the technique would work in large-scale factories.

But in Nazi Germany exchange of industrial information with foreigners was prohibited—what Hitler wanted was a one-way traffic. There were numerous plants in which mysterious experiments were conducted. The huge factories in Leuna were a special source of rumours. From a great distance yellow-brown

clouds of mysterious gases were seen billowing from their gigantic chimneys, often darkening the horizon. They filled the air with the pungent odour of ammonia, and of many undefinable mixtures. Nobody knew what was being made. Thousands of huge steel bottles concealed the output which left the factory every night for unknown destinations. In other plants, also, new technical experiments were conducted with the utmost secrecy. The workers had to swear a solemn oath not to speak of what they saw or knew. Special guards carefully searched everyone entering or leaving the gates of the mysterious war plants, maintaining constant vigil.

Today we know what those German war plants were producing, what was hidden from the foreign world and from the German people. New synthetics were produced and tested in experiments—not mere *Ersatz*, but materials of better quality than the best natural products: metals harder and lighter than steel, synthetic rubber of greater resistance to oil and to pressure than natural rubber, and new instruments made possible by the superior quality of the new materials.

The secrecy with which the Nazi leaders surrounded their work, especially in the field of synthetics, was to leave the foreign world guessing how far German technique had progressed. Mere secrecy, however, would not have been sufficient for this purpose. The will to make use of new processes and inventions in foreign countries had to be stifled, too. Thus we see that in essence the two secret weapons of the Nazis were actually complementary—one was intended to fortify the other.

The Nazi strategists, therefore, supplemented their drastic domestic measures to screen their work with active interference abroad to prevent, curb, or control technological developments there. Numerous international patent monopolies, which, through the participation of foreign enterprises, prevented technical advance abroad, served this purpose. The special role of patents, in helping to conceal the goosestepping-up of technical progress, must be noted here.

Patent laws were originally intended to promote technical progress, in a period when new inventions were the work of individuals whose genius enabled them to construct new machines or discover new technical devices. Patents were an incentive, protecting and encouraging such inventions. Today most patents are obtained and controlled by large-scale corporations.

In America the owner of a patent is not obliged to make the

new technique or technical improvement available for production. He has, in fact, the right to refuse a licence to those who want to utilize the new process. He can say "no" even if he himself declines to use the invention or uses it only for strictly limited purposes. In such a case the patent impedes technological development. If it controls a vital stage in the process of production, it may be an obstacle to the development of an entire industry—an obstacle which cannot be hurdled by other inventors.

This negative nature of patents has now largely superseded their old-time "positive" effect. Most patents filed during the last decade have been aimed at protecting enterprises utilizing and relying upon older techniques. Many large-scale industrial concerns tried to surround the industrial processes in their respective fields with a high wall of patents, to discourage or curb the rise of competition. Whenever a new method of production was introduced, numerous "protective" patents were filed in order to prevent the development of rival production. There are "protective patents", "umbrella patents", or "basic patents" which control entire industries—and there are "buried patents" which are filed and never used. These patents are purchased or filed merely in order to prevent the rise of new competitive techniques.

Thurman W. Arnold, Assistant Attorney-General of the United States, has stressed the importance of "umbrella patents": "They contain such ambiguous claims that they tend to cover an entire industry". The Krupp (German) armaments firm, for example, held such "umbrella patents" in the United States. They were utilized as a legal basis for law-suits against the Union Carbide & Carbon Corporation, in order to compel this chemical enterprise to join a patent cartel with Krupp. The Nazi firm offered cancellation of the law-suit as its *quid pro quo* to gain its ends.

One of the most important divisions of the I. G. Farbenindustrie, Germany's great chemical trust, is its department for international patent rights in Frankfurt-am-Main. Experts who have made a life study of patent rights in particular countries are engaged in the analysis and study of laws and legal decisions. The I. G. is believed to have the best library on patent systems anywhere in the world. When I G. made a new discovery and applied for patents, it did not rely upon a single patent. Additional patents were filed, in order to block any technological development which might compete with the new invention.

The services of American patent law firms were hired in order to close loopholes which might have been utilized by independent manufacturers for the development of new competitive technology. Breed, Abbott & Morgan, well known as one of the largest patent law firms, did so much work for I. G. Farben that Mr. C. Breed, one of the partners in the American law firm, also became a member of the Board of Directors of General Aniline & Dyestuffs Corporation, I. G.'s American subsidiary.

The leaders of the Third Reich thus found the ground well prepared for their strategy. In most fields of synthetic production I. G. Farbenindustrie already owned numerous patents, and they had been filed in patent offices all over the world.

The very fact that I. G. possessed numerous international patent monopolies had a profound effect on American corporations, inventors, and businessmen. They were discouraged from financing experimental work and laboratory studies in fields where they would be forbidden to utilize their inventions commercially, for new production could be curbed or stopped by the owners of the "umbrella patents".

But patents alone would have been too weak a foundation for the conspiracy against technical progress outside the Third Reich. It would have been politically impossible to forbid or completely suppress new strategic industries at a time when all the Great Powers were preparing for the second world conflict. Thus Nazi-controlled corporations, especially I. G. Farben itself, organized research and experiments in foreign countries. They exploited the technical and financial means of the foreign world, and at the same time controlled new technical developments abroad. In this way strategically important discoveries could be reserved for the Third Reich. We shall later cite numerous instances of how this practice affected important technical developments.

CHAPTER II

PRIVATE WORLD EMPIRES UNDER NAZI CONTROL

IT SEEMS that history deceived the Nazi strategists who believed too fervently in their own propaganda slogans. They were sure that the powerful forces of private finance with which

they had established far-reaching commercial agreements would decide political issues in countries where "decadent capitalism" was still functioning instead of totalitarian "order". Nazi strategy, as we have pointed out, was based on the encouragement of a definite line of thought among investors: "War is suicidal; from the point of view of the capitalist investor, war does not pay, and increases tremendously the investment risks".

Nazi strategy, however, did accomplish its purposes in one vital respect: through domination of private empires the world over it succeeded in strangling technical advances in those countries which, on the morrow, were to become Germany's adversaries on the battlefield.

The Nazis often expressed their contempt for international capitalism, and in particular for "anonymous capital" (joint-stock companies). But consistency has never been a Nazi weakness. They sought collaboration with private businesses which wanted safety for their vested interests through appeasement of the Third Reich, coupled with control of economic key positions in their own countries. This was an important factor in the operation of Nazi world strategy.

These foreign Powers were not national states; they were private corporations with world-wide financial interests. The Nazis had found a new name for them: "economic states", "private empires", the centre of which was in every case an executive office, often situated in a small "neutral" country from which a network of subsidiaries controlled other vested interests spread all over the world. For example, the headquarters of the international Kreuger trust, which collapsed in 1932, were in Sweden. Mr. Kreuger himself signed contracts with many governments which wanted his financial support and were therefore willing to grant him monopoly rights.

The national state had to acknowledge these corporations as independent powers which had their own constitutions, their own embassies, and policies which could not be identified with those of any particular national state. This point has been stressed by Alfred Marcus, a German economist to whom Nazi politicians have paid a good deal of attention. Marcus's thesis was that large-scale corporations with world-wide investments were superseding the national state.

"We might define the organizations which have today grown beyond the present sphere of economic power and

become partners in agreements with national states as some kind of 'private empire' or 'economic state'. They were an expression of the idea that economic power has attained peculiarities which we otherwise used to connect only with the political state. . . . Economic states which are not restricted by national boundaries will try to repress the national state as an economic factor so that they have absolute power in their hands."[1]

The Nazi economist, Dr. Fritz Werr,[2] extensively quoted A. Marcus as his authority on "the economic state". He particularly referred to the great oil powers, the Standard Oil Company of New Jersey[3] and Royal Dutch Shell—companies with world-wide interests and great financial stakes in many countries where they constituted first-rate political factors.

"The agreements between the big oil companies, in particular, show that any law of the state becomes meaningless for them, and that all forms of jurisdiction of the national state are done away with. . . . Most treaties are 'gentlemen's agreements', and if one party abrogates such a contract or does not fulfil his obligations, the other party does not insist upon rights or laws accorded him by the legislation of a national state. He brings forth, instead, considerations of 'fairness'. . . . This refers not only to agreements between the oil trusts themselves, but to an even greater extent to agreement between these trusts and (national) states."[4]

The rise of the totalitarian state inevitably resulted in a decline of private world empires. Their financial structures, however, still remained in existence. These companies were still firmly entrenched in the non-totalitarian world, but, as we shall see, came *partly under control of the Nazi regime.*

In this situation, Hitler was convinced that he could break the resistance of foreign states "from within", for the economic states could be compelled to co-operate with him.

[1] A. Marcus, Kreuger and Toll, Zuerich, 1932, pp. 3–4.

[2] Fritz Werr, *International Economic Combinations* (*Cartels and Concerns*) *and States as Partners*, Berlin, 1936.

[3] For the sake of brevity the Standard Oil Company (New Jersey) is often referred to in these pages as "Standard Oil" or "the Standard Oil Company". It is not to be confused with other oil companies bearing the word "Standard" in their corporate designations. Wherever "Standard Oil" is employed without modifying words, reference is to the Standard Oil Company of New Jersey.

[4] *International Economic Combinations*, p. 113.

Before Hitler's rise to power most German business executives were pervaded by a spirit of defeatism and showed little eagerness to fight again for the world supremacy of German militarism. As rulers of private empires, they were awed by the power of Wall Street and frightened by the prospect of social revolution as the probable outcome of a new world war. It is true that at the same time German militarists were known to be preparing for a second world war and the Reichswehr was secretly arming despite the clauses of the Versailles Treaty.

German industries, especially in chemical production, received special government protection, because the General Staff was convinced of the importance of such industries for a future war economy. But these policies were pursued by relatively small though influential groups, which were not typical of the spirit of other German businessmen during that period.

Most German big industrialists and bankers of that era were conservative, and were impressed by Spengler's ideas of a "decline of the West". They had come to the conclusion that Europe could no longer maintain the white man's rule in the world. America must assume the new world leadership, with Western and Central Europe acknowledging the United States as the leading world Power. German big businessmen no longer believed in their ability to resume the Kaiser's struggle for a world Reich. They were afraid of the tremendous risks they would have to take in case of another war. Elimination of risks was the major aim in their business policies. They were tired of fighting competition that could not easily be defeated, and they were always ready to compromise when confronted by powerful competitors.

The German chemical industry was in one respect in an exceptional position, for I. G.'s extensive experimental works and laboratories were to a great extent a special industry for the manufacture of new inventions. But even I. G. executives were not convinced that they could use revolutionary changes of technique to revive the German struggle for world supremacy. At that time they were for peace rather than for war. It seems that they would have been satisfied with a "junior partnership" in alliances or combinations with financially strong foreign Powers, if they were given a substantial minority share in the private division of the world.

The Third Reich did not allow the "economic state" or private corporations to act as independent powers within Ger-

many. The Nazi leaders, however, acknowledged international finance as a first-rate political factor outside the Third Reich. The Nazi mind was obsessed by the idea that big corporations were the "secret power behind the scene" in the "decadent capitalist world". These corporations financed elections, and weak governments had to rely for support on the "economic state". The latter had preserved the form of private business. It defended the principles of "free enterprise", and was opposed to government policies which interfered with the management of private enterprise.

During the days when Hitler was preparing to seize power he had solemnly promised the leaders of economic states that his dictatorship would obtain free expansion for them. In other words, the totalitarian state would not create a state economy. In fact, however, the subordination of those private corporations to the totalitarian state did not depend merely on the extent to which they were superseded by a state economy. The authoritarian power did not hesitate to regiment private enterprise. German finance ultimately had to act in accordance with the politics and interests of the Nazi regime even—and especially—when their interests clashed.

The Nazi state was extremely successful in its dealings with private corporations. The outward forms of private enterprise were retained for German corporations. I. G. Farben, Krupp, and Siemens were allowed to expand abroad, and to construct their own world empires. But they were not on an equal footing with private corporations of the United States or of Great Britain. The German corporations were no longer independent. They were agents of the Third Reich. As such, they were in a far stronger position in relation to foreign enterprises. An American private corporation, which still preserved its independence, was on the defensive at home and abroad. In its own country it might be encountering commercial competition, as well as the opposition—backed by the government—of consumer interests. Abroad, especially in Europe, it was completely dependent on the power of the totalitarian state. The latter offered it co-operation on an international scale. Monopoly rights based on patents and the control of world markets were to be shared between them. It was not an easy offer to refuse—and there were almost no refusals.

CHAPTER III

CORPORATION EXECUTIVES AND "POLITICIANS"

IT SOMETIMES happens that practical experience seems temporarily to justify theories that are fundamentally wrong. This was the fate of the Nazi strategists. They had vulgarized a popular theory which was widely accepted in Germany under the Weimar Republic, and which played an important role in Nazi strategy. According to this theory, in all democratic countries the politicians, journalists, and administrative executives were mere puppets of a few trust magnates who represented "private empires". The entire world was organized by them, and their will was supreme unless a totalitarian state superseded their absolute power. Failing this step, the democratic parliamentary state would be dominated by a bureaucracy that only fulfilled the will of international finance. Such a regime was internally weak, disrupted by social conflicts or "pressure groups", with the result that the financial forces would insist on appeasement of the totalitarian states.

The idea that a few executives of private corporations, international trust magnates, or bankers controlled all key positions in a parliamentary democracy where the governments were mere puppets in the hands of a single trust, and could therefore always enforce their will upon the government, was derived from a crudely debased Marxism. And Hitler further vulgarized this mechanical materialism. Practical experience, however, seemed to confirm his belief. It seemed to be clever policy to make a deal with the master and not with the puppets who might be easily thrown overboard. Hitler thus felt that he had obtained appeasement after having agreed upon a separate peace with powerful representatives of international finance or of corporations in control of economic key positions abroad.

Therefore, in his war speeches Hitler always referred to British and American statesmen who were against appeasement as "unscrupulous politicians who wreck whole nations and states" (Reichstag speech, July 19, 1940). He offered protection, on the other hand, for vested interests. "At no time and in no place have I ever acted contrary to British interests" (Reichstag speech, October 6, 1939).

But Nazi strategists were deceived by their successful dealings with corporation executives whom they considered the only "powers behind the scene" in foreign countries. It is true many men of the City of London were for appeasement. One of the most powerful American corporations (Standard Oil of New Jersey) was in close business association with the biggest Nazi corporation. Therefore, Nazi leaders thought the "politicians" and journalists who were opposed to totalitarian rule and who insisted upon opposing the Nazis' claim for world supremacy could be disregarded. For direct contacts with those who controlled economic key positions had been established. In Nazi eyes, the City of London was more important than the House of Commons, and Wall Street was deciding what Congress was to do. Churchill and Roosevelt were mere "politicians" who did not understand the "real interests" of their respective countries. The financial interests that had allied themselves with Hitler had the money to finance elections or to buy "public opinion"; they were in close contact with army leaders and they were calculating businessmen who realized that total war does not pay. The tremendous risks and immense losses could never be compensated by possible gains. And furthermore, resistance against an authoritarian regime requires such a strengthening of the national state that the big corporations lose their old independence. This, in itself, would predispose such businessmen towards appeasement. They had already sacrificed foreign positions to the totalitarian state; now they were clinging to their national monopolies which curbed new technology or production.

Corporations which organize international cartels have a psychology all their own. When their own government is a wishy-washy affair, gutless and toothless, they feel strong at home but weak abroad; when, on the other hand, their government is stern and omnipotent, they feel weak at home but brimming over with confidence abroad. Here lies the explanation of the apparent mystery of how German businessmen were so spectacularly successful in their international dealings. Under the aegis of the totalitarian state, they were as lions lying down with lambs.

The American corporation executives with whom Hitler dealt were wholly different from the aggressive businessmen of a bygone age—men like the elder J. P. Morgan or the elder John D. Rockefeller, who took the initiative in fighting competitors and who were willing to take great risks while amassing their family fortunes. These former business leaders were the symbols of private

enterprise that was expanding and would not brook subordination to any kind of authoritarian power. The inherited wealth of these early titans, however, now consists of absentee capital seeking safe and secure fields of investment. The new corporation executives were administrators, lawyers, diplomat-businessmen who wanted strong governments abroad for protection of vested interests and a national regime that would not interfere with their private monopolies. Their role encouraged the Nazi strategists in their belief that they could win world supremacy without real war against the old capitalist world. This was an illusion which should have collapsed with the enforced retirement of one of the outstanding private "emperors".

Sir Henri Deterding had built up Royal Dutch Shell as his private world empire. He was respected and protected by foreign governments as the sovereign manager of that gigantic enterprise. He was interested in discovering and fostering those forces which would eliminate once and for all the danger of social or colonial revolutions. Therefore he was one of the earliest financial backers of the Fuehrer—long before Hitler came to power. In later years, when Nazi Germany rearmed, he was an ultra-appeaser. He made great donations (at the expense of Shell) to the Nazis, and he personally offered to supply the Third Reich with foodstuffs and vital raw materials, the acquisition of which was to be financed by foreign credits which he would undertake to arrange. The British Admiralty, however, which had a stake in Shell's oil resources, wanted to make sure that in case of war with Germany and Japan, oil supplies vital to Great Britain should not be made available to the enemy.

Sir Henri, who did not object to the Nazi regimentation of private business, tried to defend the "rights of private enterprise" in Britain. This confirmed the suspicions of the British Admiralty concerning Sir Henri's reliability in the event of a world war. He was ousted from his chairmanship, and finally was compelled to resign from Shell's world organization altogether. He lived out his last few years in Holland, an embittered old man, stripped of influence, making strenuous efforts to regain Dutch citizenship.

The Nazi strategists might have learned from this experience, but they were blinded by their own fixed ideas. Deterding's setback was a prelude to the failure to produce the appeasement policy which the Nazis expected from the British government.

The American counterpart of Shell pursued a foreign policy

which conflicted with efforts to strengthen national defence. Until Pearl Harbour the foreign policy of Standard Oil of New Jersey was apparently based on the expectation that the Third Reich would become supreme in Europe. And it seemed to be sound business policy for the great oil enterprise whose interests extended almost throughout the globe not to antagonize the new world Power.

Personal interests still play a great, and often decisive, role. In large-scale corporations they are interwoven with the management of anonymous capital owned by holders of stocks and bonds. One of the biggest absentee owners of Standard Oil is John D. Rockefeller, Jr. The question, accordingly, has been raised whether Mr. Rockefeller, as the largest stockholder of Standard Oil of New Jersey, approved the international policies of the corporation in which he had a large financial stake. It is known that he was not in agreement with the "appeasers" and even in prewar days wanted close collaboration with Great Britain. But John D. Rockefeller, Jr., has refused to express publicly any opinion on the policies of Standard Oil. This was a matter of business, and he apparently did not want to mix his private views with the management of his financial interests.

Three personalities had played a decisive role in the management of Standard Oil since the totalitarian state became an important factor in world politics—Walter C. Teagle, W. S. Farish, and Frank A. Howard. Mr. Teagle is now retired, though he still holds the honorary position of chairman. Mr. Farish is the real head, the organizer and administrator who knows better than anyone else the details of the gigantic organization. In his business strategy, however, he relies on Mr. Howard, whom insiders consider the head of Standard Oil's "brain trust".

Mr. Howard's career reflects important trends in private corporations. He came from the Middle West to New York, where he can pride himself on having "made good". He was a young, unknown corporation lawyer, eager to carve out a career and with the greatest respect for the power of Standard Oil, when he became the right-hand man of Mr. Teagle, then serving as president of Standard Oil. Soon Mr. Howard himself became an executive as Standard's leading expert on patent rights; he also handled foreign relations with I. G. It seems to be of particular significance that Mr. Howard's first great achievement was the conclusion of a close alliance with I. G., as a result of which Standard Oil and I. G. were to pool the control of all chemical patents in the whole

world except in Germany itself. Mr. Howard could later boast he had helped to bring together the biggest oil and the biggest chemical power in the world, both agreeing on a "division of interests" which obliged Standard Oil to help I. G. in its attempts to dominate new key positions in the world economy, a domination largely based on the control of synthetic processes in production.

After the outbreak of the present war, when the conflagration was spreading from the European continent and Africa to all other corners of the world, Mr. Howard considered it his special duty to prevent Standard Oil from doing or saying anything that might be considered "unfriendly" by I. G.

Even in early summer, 1941, the Jersey corporation still played a special role in the hope of the Nazi strategists. The Nazi air offensive against Britain had failed to end the war in blitzkrieg fashion. Russia was still neutral. So was the United States, though its lend-lease programme made it clear whom this country was backing.

At that time I heard a number of rumours about I. G. Farben and Standard Oil of New Jersey. According to these rumours, I. G. had succeeded in signing secret agreements with Standard Oil which were to be effective during war-time and which were to survive the war, thus influencing the policies both concerns were to pursue.

In June, 1941, I decided to try to see Frank A. Howard, who, as a leading Standard Oil executive, had negotiated the deals between Standard Oil and I. G., and who was best informed on the relations between these Powers.

My interview with Mr. Howard was an unusual experience. Mr. Howard was willing to answer questions, though he carefully considered every word he said and sometimes reflected for several minutes before he would give an answer. Yet he did not seem surprised at a rumour I repeated to him:

"I want to tell you another rumour I heard in Washington. Perhaps you will be amused by it, but I want to tell it because it may be of interest to you. There is a story in circulation indicating that Standard Oil of New Jersey must shift its policies in accordance with the turn of the war situation. The old ties with German interests such as I. G. Farben must be cut. The old treaties are embarrassing. Therefore, somebody will have to be blamed for these past ties. And that somebody will be you."

Mr. Howard, wryly: "I am to become the scapegoat?"

"Exactly. That is the story."

Mr. Howard told me that he and Standard Oil were one hundred per cent pro-British and for war against the Nazis. He emphasized that there were no longer any ties with the German chemical trust. But several months later, as government investigations were to disclose, Mr. Howard was instructing the Standard Oil officials to act in accordance with special contracts with I. G., and Standard Oil was still supplying Nazi air lines in Latin America with aviation gasoline.

Something should be said here about the personalities of I. G. executives, who often turned out to be much better negotiators than their foreign counterparts.

The German chemical trust, I. G. Farbenindustrie, is an "old love" of mine. The first book I wrote was on the power of I. G. At that time I visited the headquarters of the German chemical trust in Berlin and discussed the policies and interests of I. G. with one of its leading executives. He did not like publicity and attempted to persuade me to write about another theme: "There are so many interesting subjects," he said. "Why must you write about us? We would be delighted to help you write about something else."

It was not difficult to explain why I wanted to write about I. G. These big corporations were powerful social and political forces, and therefore I wanted to know more about them. In addition, the prime importance of the chemical industry in the event of war, and the role of chemical developments in a second technical revolution, made the chemical trust a major interest to me and to the public. The executive of I. G. to whom I spoke at that time is a disgruntled "old conservative" today. He has been replaced by an army officer who happens to be an "old Nazi".

The original executive managers of I. G. were first-rate chemists as well as experts in international politics and perhaps the best international diplomats that the Reich ever had. Old Karl L. Duisberg, the founder of I. G. Farben, for instance, was one of the world's leading chemical experts. As a member of the Economic General Staff under the Kaiser during the First World War, he organized chemical war production in Germany. When Hitler came to power he was still a leading executive, but already an old man. His experience and prestige were highly respected by the other leading men of I. G., but he was no longer its chief strategist. This role had fallen to Dr. Karl Bosch, also a first-rate chemical expert and a former member of the Kaiser's War Eco-

nomic Council. Bosch became I. G.'s Ludendorff, while old Duisberg was called the "Hindenburg of I. G." The third in the triumvirate was Hermann Schmitz, the financial genius.

Under Hitler a younger generation of executives came to the top, supplanting the old triumvirate. Until then there had been two schools of thought among the executives of I. G. Some still believed in international trade and finance or revival of private world empire. Others were "autarchists" who relied on national monopolies and "self-sufficiency". Duisberg and Bosch were adherents of international trade. They still clung to the belief that trade in dyestuffs and pharmaceutical products was better business than sales of explosives. Though these old diehards did not miss opportunities to get government subsidies for new strategic industries, they also tried to keep I. G. their private world empire.

Consequently, under the Nazis, Duisberg and Bosch were completely pushed into the background. Dr. Schmitz, as the only surviving member of the old triumvirate, remained the financial fox of Nazified I. G. Richard Illgner became the new strategist. He was the supple diplomat-businessman, without the scientific training of men of the old school like Hans Haber, the inventor of the synthetic nitrate process. Illgner was the prototype of the pure "Aryan". He was blond and stout like Goering, but he suffered from some kind of inferiority complex. When he talked with one of the "old guard" or a real chemist he tried, without much success, to hide his lack of scientific training. He was sure, without being a chemical expert, to make a career even under the old regime, for he had married a daughter of Duisberg and had been the personal secretary of financial chief Schmitz. Within the I. G., Illgner represented the Nazi school of autarchists who considered the belief in international trade outdated. It was easier to obtain state subsidies than to compete on the world market. This young school of Nazi executives had less scientific training or technical knowledge than their predecessors, but more experience in diplomacy and politics. Illgner, a brother-in-law of Walter H. Duisberg, Jr., who was sent to America in 1929, became the real "man behind the scenes" in I. G.'s management under Hitler.

During his first year in the United States Walter H. Duisberg studied American patent laws and "the Washington scene". Then he became the leading executive of the American subsidiary of I. G. Chemie, American I. G. Chemical (now General Aniline & Film Corporation). In 1940, Walter Duisberg resigned first from the chairmanship and later from the Board of Directors of General

Aniline in a vain attempt to convince Washington that this company was no longer under control of I. G. The old board elected Judge John E. Mack as chairman, and William C. Bullitt as an aide. Both resigned after a few months when Leon T. Crowley, the official Alien Property Custodian, took over the control of the corporation, which holds a key position in American manufacture of important chemical war materials. (We shall deal with the American subsidiaries of I. G. in greater detail in another chapter —see pages 40 ff.)

I. G. executives were undoubtedly ingenious in the exploitation of patents and of new possibilities for synthetic production which were a threat to foreign interests. This fact has been acknowledged by most critical observers. Yet the German big business leaders were not the type of daring entrepreneur of the previous era; they were skilful diplomats who knew their own weaknesses and strength as well as the weaknesses and strength of their counterparts. In their foreign business relations they were especially successful in manoeuvring into a favourable bargaining position. They did not simply bluff, for they were subsidized by the state and could appeal to their government for protection. They did make blunders, but blunders they could not avoid. For the state protection they readily accepted brought them finally into a position where the protector could dictate to them and compel them to take much greater risks than they would ever have assumed in their private business.

CHAPTER IV

THE RISE OF THE I. G. WORLD EMPIRE

THE GERMAN chemical trust began its rise to private world empire as a poor relation of Standard Oil. Its strength was that it could utilize the power of the state at home and even abroad in order to strengthen its position; for patent monopolies compelled the United States government to protect I. G. monopolies in America. Thus the history of I. G. before the onset of World War II can be written as a satire on American corporations and the antitrust law.

In the 'twenties, I. G. was without liquid funds necessary for technical reconstruction and the maintenance of its expensive

laboratories. The Standard Oil Company of New Jersey, on the other hand, was at that time one of the most powerful enterprises in the world. Its assets amounted to over three times those of I. G. Farben. It was backed by banks with almost unlimited financial resources. I. G. even lacked the support of Germany's leading banks; it had tried to avoid financial dependence on them partly because German banks during this period were themselves dependent upon foreign financial support, predominantly that of American institutions.

At that time it was certainly impossible to visualize a situation in which the American oil company would accept a subordinate role by letting I. G. have the major share in world markets and permanent control of most fields of synthetic production. When, in the late 'twenties, I. G. executives were sent to New York to negotiate a business alliance with Standard Oil, they must have been fully aware of the weakness of their own position; I. G. was in urgent need of financial assistance in order to carry on its expensive laboratory and experimental work. Because of the loss of most world markets, only a small part of the capacity of the dyestuff industry, which before the war had been the backbone of German chemical works, could be utilized. The German dyestuff monopoly was a thing of the past. The only successful new production was synthetic nitrates. But immediately after the war competitive production in most countries made it impossible for I. G. to achieve a new world monopoly. From experiments during the First World War it had inherited a number of processes for synthetic production of raw materials, but further experiments with these processes were disappointing; despite German government subsidies the new synthetic production could not compete with natural products.

Under such conditions I. G. executives had to seek a way which would make available to them American financial resources. New synthetic processes for producing oil and rubber, which at that time were already known but not cheap enough to be competitive with natural production, were utilized as the main bargaining assets in negotiations with American and British companies.

Standard Oil, on the other hand, was much concerned about the future of its investments. These spread over the entire world and were exposed to intensified competition, while at the same time they were vulnerable to political pressure groups and rising social and national movements against private corporations. Thus, at the end of the American era of prosperity, Standard Oil

executives were not confident about their business prospects. Standard Oil's world position was declining, while Shell had become stronger. In America itself Standard Oil's share in production was decreasing too. Furthermore, there was a fear current at the time that American oil deposits might soon be exhausted, making Standard Oil refineries dependent on oil supplies from rival companies or from abroad.

At such a psychological moment I. G. executives appeared on the scene. What did they have to offer? They did not own or control oil deposits, nor could they open up new oil markets. Their only asset was a list of international patent rights in the field of chemical production. The Standard Oil executives were strangers in this field where German chemical industrialists for decades had been skilful masters.

Before the negotiations with Standard Oil began, I. G. had, in great haste, completed its first coal-oil plant in Leuna (central Germany). It carefully avoided letting the foreign world know that synthetic oil was at that time a disappointing and unprofitable affair. Only many years later, after further experiments and studies (largely financed by Standard Oil), did I. G. gain the "know-how" and really have something to offer in this new industry. Standard Oil executives then and later were awed by the chemical genius of the Farben trust. I. G. seemed to offer fresh blood to an ageing giant.

I. G. executives held out the patents they owned as bait to catch the fish—a world-wide agreement with Standard Oil. At that time it seemed to be obvious that in a combination of Germany's big chemical and America's big oil power, I. G. was an equal partner. Mr. Teagle pointed out that Standard Oil would be a "junior partner" only in limited fields. In principle, however, the two concerns were to be on equal footing, with I. G. "controlling the German market", and Standard Oil controlling the American market. If this clause had been upheld, Standard Oil might have obtained the superior position for itself. For the American market was obviously larger and a source of greater income than impoverished post-war Germany.

The relative strength of the German chemical trust in negotiations with the American oil concern depended largely on the protection which American laws and American authorities gave to I. G. Farben (and its new American associate) against the rise of competitive production or new technological developments in America. This was the greatest asset which I. G. could bring into

a combination with Standard Oil. Mr. Teagle tried to figure out how much this negative asset might mean in terms of money. He obviously failed. It was a superhuman task. Said Mr. Teagle:

"The I. G. are the only ones who can really appraise the relative value of their patents in the United States and the rest of the world outside of the United States and Germany".

August von Knieriem, executive of I. G. Farben, on the other hand, had insisted that Standard Oil buy a pig—a $30,000,000 one in this instance—in a poke. He said:

"The scope of the agreement must be settled first before the scope of the patents can be given".

I. G. had specialized in exploiting patent laws all over the world in anticipation of just such agreements. Its executives were able to manipulate the negotiations in such a manner that Standard Oil, for all its habitual caution, was merely taking a shot in the dark.

That shot had two possible bull's-eyes; if it hit either, Standard Oil executives felt they would be well rewarded. One was the aforementioned synthetic production of oil; the other was the synthetic production of rubber which I. G. officials darkly hinted would break the existing world monopoly of British–Dutch interests.

CHAPTER V

THE SECRET CONTRACTS

On November 9, 1929, the pact was signed between Standard Oil and I. G. Farben enabling the latter to dominate and prevent vital chemical developments and to utilize the power of Standard Oil for its own purposes. We shall later see that the clauses of the pact were formulated in such a way that I. G. Farben could arbitrarily prevent or encourage new chemical developments; it could charge the costs for expensive experiments to the jointly owned American companies, while the results—contrary to the agreement—were often kept as an exclusive secret of I. G.

The new combination of I. G. Farben and Standard Oil was much more than an ordinary commercial deal or an international cartel. It was a "friendship pact", an alliance that was expected to last for many decades. Both organizations were to grow and to expand together, sharing risks and profits.

I. G. Farben and Standard Oil promised to assist each other everywhere in the world. They were to make common efforts to gain world control of new synthetic production. I. G. Farben suggested to Standard Oil, and Standard Oil accepted, a "division of industrial activities" which any industrial expert would have declined unless he were compelled to surrender to a stronger competitor. The I. G. proposal was:

Standard was to get the majority share or the control of industries which produced oil or gas rather than chemicals. I. G. was to have the majority or the control of spheres where chemical products rather than oil and gas were produced, though the latter might be—and often were—the basic raw materials of the ultimate product.

I. G. executives themselves pointed out that such a division was arbitrary, and that many—perhaps even most—industrial chemical processes were borderline cases. Here I. G. was to have the majority, though graciously conceding a "substantial participation"—of course only a minority—to Standard Oil.

This division was recognized in the first of the four "agreements" drawn up at that time between the two organizations:

"Standard agrees to transfer to I. G. control of the manufacture and sale of any new chemical development not closely related to the present Standard business and I. G. agrees to transfer to Standard control (outside of Germany) any new chemical developments closely related to the oil industry, and I. G. also agrees to share with Standard (outside of Germany) any new chemical development using petroleum or natural gas as a raw material, but under I. G.'s control.

"The Company (Standard Oil) recognizes the preferred position of I. G. in the industries known as chemical, and I. G. recognizes the preferred position of the Company (Standard Oil) in the industries known as oil and natural gas.

"Neither party has any plan or policy of so far expanding its existing business in the direction of the other party's industry as to become a serious competitor of that other party, but each recognizes that certain overlapping of activities will exist.

"If the Company (Standard Oil) shall desire to initiate anywhere in the world a new chemical development not closely related to its then business, it will offer to I. G. control of such new enterprises on fair and reasonable terms."

When this pact was signed the oil industry was already firmly

established. Its huge investments had to be protected against the undue depreciation that might be caused by new competition or declining prices and over-production. The chemical industries, on the other hand, still were more or less a thing of the future. I. G. had obtained Standard Oil's agreement that I. G. would control the new chemical industries. The future was to belong to I. G. Farben, and the past to Standard Oil. The latter was promised, in recompense, additional protection for its oil interests.

Furthermore, as a result of the contracts, I. G. got a free hand in Germany for expansion in chemical as well as in oil industries without granting any share to Standard Oil. In America, on the other hand, Standard Oil was not allowed to enter the field of chemical production. I. G. was to control this development. The German chemical trust could even claim a "substantial share" in new works for the manufacture of synthetic-oil products. The strict fulfilment of this obligation was secured by a special arrangement. I. G. promised to transfer its patents which controlled new processes in "the oil and natural gas industries"—not to Standard Oil, but to a newly formed company: Standard-I. G. (now Standard Catalytic Corp.), owned in common by both parties. This company was obliged to pay the immense fee of "20 per cent of gross receipts, or a fixed rate from hydrogenation royalties" to the German trust. In other words, twenty cents had to be paid to I. G. for every dollar taken in by Catalytic from the sale of synthetic oil. I. G. could expect an annual income of many millions of dollars paid by American consumers of oil.

Another clause obliged both parties to "communicate to each other all technical knowledge and experience, past, present and future, patented and unpatented, of which the parties are now possessed or shall thereafter be possessed in the sense of having the power to dispose of them . . .".

This obligation was not fulfilled by I. G. As a matter of fact, Standard Oil never was able to obtain the execution of this obligation, while I. G. could always closely observe every new experiment made in the laboratories of the American company.

The second agreement provided for a world-wide control except in Germany of all "present and future processes, both patented and unpatented, for the manufacture of products of the oil industry" by Standard Oil. This part of the secret contract was later modified. Standard Oil did not in fact attain sole control of the synthetic-oil processes even in America. I. G. was able to become a "substantial partner" that could influence synthetic-oil

production in the United States. Standard Oil was, on the other hand, obliged to transfer its present and future patents for the hydrogenation process (see Chapter XII) to I. G. We shall see later that the mutual obligation for exchange of "all technical knowledge and experience, past, present and future, patented and unpatented, of which the parties are now possessed or shall hereafter be possessed", especially in the hydrocarbon field (synthetic rubber, etc.), remained largely a one-sided affair. According to this part of the deal, I. G. apparently was the giver and Standard Oil the taker, but there were no provisions which would guarantee the surrender of technical experiences and the like. I. G. could and did keep essential production secrets for itself.

The third agreement provided for mutual assistance in the event of an attack upon the patent rights of either party. It read:

> "Both parties agree that in the event of an attack by a third party brought against either of them directly or indirectly, in attempted derogation of the title to patent rights transferred, hereunder, they will co-operate loyally in defence of such attack".

But Mr. W. C. Teagle, then president of Standard Oil, insisted on a special supplementary agreement which stressed certain implications of the Standard Oil–I. G. pact.

He also emphasized that the "spirit of the agreement should survive under changed conditions", for instance, we may assume, in case of international conflict. This conclusion must also be drawn from the following letter that Mr. Teagle wrote to the I. G. executives who had come from Germany to New York:

"Nov. 9, 1929.

I. G. Farbenindustrie, A. G., Frankfurt a. M.
c/o Dr. Hermann Schmitz and Dr. August von Knieriem,
Savoy Plaza Hotel, New York.

"GENTLEMEN,

"Referring to the series of agreements dated Nov. 9th, 1929, to which we are parties, we wish to state that it is our understanding . . . that each party proposes to hold itself willing to take care of any future eventualities in a spirit of mutual helpfulness, particularly along the following lines:

"In the event the performance of these agreements or of any

material provisions thereof by either party should be hereafter restrained or prevented by operation of any existing or future law, or the beneficial interest of either party be alienated to a substantial degree by operation of law or governmental authority, the parties should enter into new negotiations in the spirit of the present agreements and endeavour to adapt their relations to the changed conditions which have so arisen. . . .

"Yours very truly,

"Standard Oil Company (N. J.)

"by W. C. TEAGLE, *President.*

"Accepted: Nov. 9th, 1929.

"I. G. Farbenindustrie.

(Signed) H. Schmitz, v. Knieriem."

A solemn promise was made to help each other in the protection of patent monopolies "in the event of an attack by a third party" —the third party being, presumably, a rival firm or its own government. We have to conclude from the above agreement that Standard Oil promised to help I. G. if the American government would attempt to act against I. G. patents in the United States, and, vice versa, I. G. promised to defend Standard Oil's patent rights in Germany. The latter promise was, of course, of little practical value while Standard Oil tried to fulfil the spirit of the agreement.

The fourth and final agreement obliged Standard Oil's subsidiary in Germany to purchase synthetic oil from I. G., and the latter promised to buy imported crude oil in Germany only from the American firm. This provision was important only because it forced Standard Oil to support I. G.'s synthetic-oil production in Germany.

Even at the beginning of the negotiations between both companies Standard Oil was willing to acknowledge the primary role of I. G. in the chemical field. An inter-office memorandum of Standard Oil on a meeting held on March 21, 1929, between Messrs. Teagle, Von Riedemann, Clark, Howard, and Haslam, representatives of Standard Oil, on the one hand, and Messrs. Bosch, Gaus, Schmitz, Von Knieriem, as representatives of I. G., on the other hand, did not leave the slightest doubt as to the implications of the new pact. The memorandum of the meeting between the executives of Standard Oil and I. G. Farben drawn up at the office of the Standard Oil executives expressly stated:

"Memorandum on Meeting of March 21st, 1929.

"Mr. Teagle stated that we were willing to be junior partners in the chemical field provided our minority interest was sufficiently large.

"Dr. Bosch (I. G. Farben) replied that they would offer us 49 per cent."

In later years Standard Oil defended the far-reaching privileges conceded to I. G. in 1929 by explaining its anxiety over the possible early exhaustion of America's oil resources. But other considerations were of even greater importance. I. G. astutely played one private empire against another. For instance, I. G. continued negotiations with du Pont in America, with Imperial Chemical Industries, Britain's leading chemical concern, and with the British–Dutch Shell trust, discussing with the latter the establishment of a common European front against America's oil companies. Furthermore, I. G. also implied that her mass production of synthetic oil could be immediately started, and that other synthetic chemical processes would soon supersede old raw-material monopolies. I. G. offered its assistance in bolstering the waning power of the old raw-material monopolies. They were to participate in the control of new monopolies in synthetic or chemical production before any competitor could enter this sphere of production.

Standard Oil, in addition to surrendering so large a share of the world market in the industries of the future, paid a tremendous price for patents and processes which were based on paper formulas without experiments or tests to indicate their practical value. I. G. received $30,000,000 in cash and stocks which could be turned into cash. This huge amount, which saved I. G. Farben from acute financial difficulties, did not buy the patents which I. G. possessed. Standard Oil did not even obtain the right to exploit I. G.'s patents in America. Standard Oil was to discover it had to spend in addition over thirty million dollars on research for the I. G. processes. Thus Standard Oil made an outlay of over sixty million dollars for the development of processes which were patented by I. G. and which remained largely the property of the German chemical trust.

But Standard Oil executives believed that they had outgeneralled Deterding and Shell by signing exclusive agreements with the German chemical trust. The latter had also negotiated with Shell, skilfully exploiting the Shell–Standard Oil rivalry.

Mr. Teagle's report, given at a meeting of the executives of Standard Oil, on his negotiations with Sir Henri Deterding, expressed satisfaction at the apparent victory over his rival; as a result of his deal with I. G., Deterding had to "come in" as a minority partner if he wanted to have peace with Standard Oil.

Mr. Farish, president of Standard Oil, denied the existence of a world-wide cartel with I. G. Farben when he was questioned by Senator O'Mahoney before the Truman Committee (April 1, 1942):

SENATOR O'MAHONEY: ". . . The policy of the company is to nurture and to stimulate the business in which you are engaged and to proceed with the policy to which you are committed, of a worldwide division of territory under a cartel arrangement with I. G."

MR. FARISH: "No, sir."

SENATOR O'MAHONEY: "What was the contract of 1929?"

MR. FARISH: "It was not a world-wide cartel arrangement."

But British and French competition had to face a united front of Standard Oil and I. G. Farben, for the agreement expressly provided for closest international co-operation against any other Powers which were "unfriendly" to Standard Oil or I. G. Farben.

We shall later see that the advantages which I. G. Farben could derive from the agreement were in other respects, too, much greater than those of Standard Oil.

These contracts enabled I. G. Farbenindustrie to impede or stifle, especially in the field of synthetic production, new technological developments which may revolutionize our entire industrial structure.

W. S. Farish, president of Standard Oil of New Jersey, in his testimony before the Senate Committee to Investigate the National Defence Programme (Truman Committee), declared:

"I wish to assert the conviction that whether the general contracts made with I. G. did or did not fall within the border set by the present statutes of the Sherman Act, they did inure greatly to the advance of American industry and more than any one thing have made possible the present war activities in aviation gasoline, toluol, and explosives and in synthetic rubber itself."

The author's contentions, on the contrary, are:

1. The pre-war alliance of I. G. Farben–Standard Oil impeded rather than promoted in America the chemical revolution on which the effectiveness of war economy greatly depends.

2. I. G. Farben was able through these agreements to get the

better of Standard Oil. I. G.'s *quid pro quo* consisted essentially of the aid it promised to Standard Oil for the latter's attempts to gain a privileged position in the United States.

3. The collaboration between I. G. Farben and Standard Oil aimed at the common conquest of new world monopolies. The goal ultimately was to gain control of new strategic positions in the world economy and "appeasement" of the Third Reich as the *supreme* world power.

4. This world control to paralyze the advancement of chemical revolutions was not effective in pre-war Germany. The Nazi state organized and subsidized chemical industries which were essential in totalitarian war, and at the same time it supported I. G. Farben's foreign policies which curbed chemical developments outside Germany. This is particularly true of the new synthetic processes which were utilized by I. G. Farben to gain a leading world position.

These conclusions must be drawn from a study of the material collected by the Truman Committee, the Senate Patents (Bone) Committee, the Antitrust Division of the Department of Justice, and by private sources. Essential parts of the overwhelming evidence, proving the correctness of the above points, will be quoted in other chapters of this book. The point which should be stressed here is that the secret contracts of 1929 were the beginning of a new era in the relationship between corporations with world-wide interests, a retreat of America's biggest corporation and the reappearance of a German trust in the world arena. The new expansion of I. G. Farben as a private world empire did not strengthen the position of private corporations with world-wide interests. On the contrary, it was the beginning of the end of the private world empire, though the façade remained intact.

CHAPTER VI

TRANSFORMATION OF I. G.

UNDER THE Third Reich, I. G. became the most important transmission belt for Nazi strategy in America; it was to play an important role in the bid of German imperialism for world rule because of the particular importance of chemical production in

war, and because of the world-wide organization of I. G. In Germany chemical or synthetic production was promoted by the government on a gigantic scale. As a result, the German chemical trust greatly expanded and became the leading national enterprise. It had to adapt its business policies to the requirements of military strategy. I. G. did not want new synthetic production of strategic materials abroad, even if such a policy meant a decline of income from licences or patent rights. Foreign partners who waited for the surrender of the detailed technical knowledge could not expect the fulfilment of such promises—until after the war, when Nazi supremacy would be consolidated. Until then, the German trust insisted, it must remain in sole control of production of strategic materials.

Thus the secret contracts between I. G. and Standard Oil became a pact between a private world empire and a totalitarian state.

Did the executives of Standard Oil who were associated with I. G. before and after the Nazification of the German chemical trust comprehend the changing nature of their associate? Yes, and no. I. G. continued to do "business as usual". It often seemed that I. G. was still an ordinary private corporation whose executives criticized their own bureaucracy and their party regime as freely as did their foreign business friends whom they trusted. Mr. Howard of Standard Oil confided to me that I. G. executives, during the first few years of Nazi rule, still believed in some kind of "conservative revolution" or a *coup d'état* by the army, with the support of the industrialists. Later, however, I. G. officials realized that the Nazi regime could not be shaken off, and they tried to make the best of a situation they could not change.

In 1934 Germany had only begun to rearm. It was not yet strong enough militarily to challenge other big Powers. This handicap was removed during the next few years.

I. G. was not evasive about the significance of her new relation with Standard Oil. She gave an open warning to her American partner that I. G. was no longer an independent business enterprise, and that Standard Oil had to take this into consideration. In a letter to Standard Oil, the I. G. executives wrote at the beginning of 1934: ". . . Another complication is the present policy of the German government in requiring examination and approval of foreign contracts".

According to Irving Lipkowitz of the Antitrust Division of the

Department of Justice,[1] "this reference to the German government's direct participation in all of I. G. Farben's foreign activities should have put Standard Oil on guard that its dealings with its German partner from then on would go far beyond the scope of private business. Thenceforth I. G. Farben decisions should have been regarded as German government decisions, and since this was 1934 that meant Nazi decisions."

The turn of events was unmistakable. Earlier the superior position of I. G. was accidental. Now it became a matter of avowed principle. Formerly "collaboration" and compromise rather than preparation for world conquest was in the minds of I. G. executives. Now the foreign partner had to choose between accepting the terms of I. G. or bearing the consequences of a world-wide struggle.

Earlier I. G. executives had openly indicated that it was not worth while then to fight for German world rule. Now such a conciliatory attitude was considered an expression of "capitalist decadence". The foreign business partner could "take it or leave it".

Standard Oil did not reply to the above warning, and accepted the *fait accompli*. This attitude was not surprising, for the German government was behind I. G. in case of conflict with foreign competitors. Standard Oil could have resisted the demands of I. G. only if similar support by its own government were assured. In such a case the system of free enterprise in America could not survive. Standard Oil was willing to defend its position as an independent private power—at least in domestic affairs. Therefore it did not want to enter into a struggle against I. G. Instead, it expected to remain the "junior partner" of I. G. and to purchase "protection" from the Nazi Reich for Standard Oil's foreign interests. This deal seemed less costly than antagonizing I. G. Farben or the totalitarian state.

It often seemed that I. G. was more realistic about the possibility of a new world conflagration than the leading men of Standard Oil. For I. G. executives were, of course, well informed about the war preparations of the Third Reich. The skilful business diplomats of the German chemical trust expected war, at least a "little" war in Europe which would leave the Nazis in control of the Continent. But they were not sure whether a world conflict could be avoided. Accordingly, they prepared for the war-time protection of their American interests.

[1] Statement before the Patents Committee.

When the first war clouds appeared on the horizon, I. G. hastened to transform its Swiss branch, I. G. Chemie, Basle, into a formally independent and "neutral" company and to transfer to it its American interests. This was to prevent the seizure of its foreign properties, particularly of its patent rights, in case of a second world war. Thereby the question of real ownership of I. G. Chemie was of great interest to the United States government. General Aniline could otherwise maintain the fiction of not being controlled by I. G. Farben during the first stage of the war, since its parent body was an "independent" Swiss concern, without apparent German affiliations. As a result the United States branch of I. G. was able to defend Nazi commercial interests, in Latin America, for example, when the blockade interrupted German trade with the Western Hemisphere. American chemical products were sent to Latin America, where they were delivered to I. G. customers under German labels in order to create the impression that the blockade had not interrupted Nazi trade.

Only after Pearl Harbour did a special government decree put an end to the fiction of "Swiss" ownership of I. G. Chemie. General Aniline was declared "enemy property".

Why was there such a long delay in the official recognition of the obvious fact? The slightest doubt about the real ownership of General Aniline could easily have been dispelled if Standard Oil had been willing to reveal the truth to the government. Standard Oil was, of course, always well informed on the American interests of I. G. The Securities and Exchange Commission had tried to clarify this point before the war broke out by questioning Mr. Teagle, who was a member of the Board of Directors of General Aniline, subsidiary of I. G. Chemie, about it. This investigation did not lead to definite results, though Mr. Teagle was asked to reveal who the owners of the company were. His testimony left the impression that he felt under deep obligations to I. G., with the apparent implication that I. G. Farben and Standard Oil would protect each other's interests in case of war.

Mr. Teagle, in short, professed ignorance of the owners or controllers of stock in this company, when questioned by the Securities and Exchange Commission:

QUESTION: "Throughout your tenure of directorship you say you did not know who the controlling owners of the American I. G. Chemical Corporation were?"

MR. TEAGLE: "That is correct."

QUESTION: "We do not know and you do not know at the present time who controls that corporation? Is that not so?"

MR. TEAGLE: "That is correct. Yes."

QUESTION: "Have you ever made any attempt, Mr. Teagle, to ascertain who were really the beneficial owners of the Class A and Class B stocks?"

MR. TEAGLE: "No, sir."

QUESTION: "When you say you do not know who controls it, Mr. Teagle, it is apparent it is controlled by European interests, is it not?"

MR. TEAGLE: "Well, I think that would be a safe assumption."

QUESTION: "They [American I. G. Corporation] have election of the members of the board of directors, do they not?"

MR. TEAGLE: "They must have, yes."

QUESTION: "Do you know who votes for you?"

MR. TEAGLE: "I do not."

QUESTION: "What do you do?"

MR. TEAGLE: "I sign a proxy."

QUESTION: "And you assume the people in Europe do the same thing, sign a proxy; but as to who is voting that stock you do not know?"

MR. TEAGLE: "The proxy is made out, I believe, in the names of certain gentlemen who vote the proxies by the stockholders."

The yes and no replies of Mr. Teagle, although no doubt technically accurate, were more than badinage by a busy capitalist. They indicated a spirit which was expected to survive the war. Private empires will defend each other's stakes according to their own laws and rules, which know no national boundaries. But these private world empires could no longer exist without seeking "protection" from totalitarian states which co-operated in sustaining private monopolies abroad. Of course the Nazi strategists insisted on a price which was especially valuable in times of war. Then the procurement of strategic materials, especially of oil for German submarines and planes, was aided by the ties Nazi corporations had created with private world empires.

CHAPTER VII

BUSINESS AS USUAL

MOST CORPORATION executives did not realize the nature of total war when the Third Reich overran Poland and the "phony war" began. Like many conservative generals, they were still thinking in terms of 1914–1918 experiences. At that time, private corporations with world-wide interests had certain opportunities to save their properties in enemy lands. It is known that in then neutral Holland and Switzerland pooling centres were formed, with "neutral" middle-men who arranged for belligerent property to be transferred to "neutral" hands, or exchanged between corporations to enable them to survive the war without serious damage to vested interests. A well-known Dutch politician, for instance, repeatedly travelled to Switzerland as representative of international oil corporations. It seems that these "trusted middle-men" also played an important role in international post-war deals between big corporations, especially in the foundation of the alliance between I. G. and Standard Oil. Such international deals have since become state affairs. Corporate interests have been mobilized for the war effort by the totalitarian state.

Was this fully realized by Standard Oil when the Second World War began? At that time this American firm found itself in the embarrassing situation of being the associate of a Nazi corporation and of the Third Reich in important undertakings. Furthermore, a great many of its foreign interests were under the thumb of the Nazi regime. It seems that before Pearl Harbour Standard Oil executives still believed that they could arrange with I. G. to "suspend" peace-time contracts which could not be made effective in times of war and to protect each other's interests. Of course, such a proposition could not be made without the knowledge of the government of the Third Reich. In other words, such a deal had to assume that the Third Reich would survive the war, as total victor or at least through appeasement which would leave the Nazis in control of the European continent. Otherwise, there was not the slightest chance for a war-time understanding with the biggest German enterprise.

Then a strange situation arose. In case of total war—which

Standard Oil did not expect—German properties in America would be taken over by the United States government as enemy assets. In such a case Standard Oil would have to share the loss with I. G. This risk of seizure of enemy property was greater for Standard Oil than for I. G., because American properties in Germany were under state control and part of the Nazi war economy. It did not matter whether the name of the firm were changed. In America, however, I. G. interests were split into direct subsidiaries and into partnerships with Standard Oil. The American oil giant suddenly realized that large vested interests in America itself would be treated as "enemy property", and that patents which also protected Standard Oil monopolies might be taken over by the government. Therefore Standard Oil sent Mr. Howard as direct emissary for a special conference with I. G. at The Hague.

This journey of Mr. Howard to war-time Europe is one of the strangest episodes of World War II. He arrived as an associate of I. G. to receive the terms under which the German chemical trust was willing to change the contracts and to let Standard Oil become the sole owner of properties which up till then also belonged to I. G.

What price had to be paid for such an agreement? What kind of war-time co-operation or assistance was demanded? Something had to be conceded that would be of advantage to the Nazi strategists. The full content of these negotiations is still shrouded in mystery. We know, however, that Mr. Howard made a startling journey from Paris to London to The Hague and finally selected—with strange foresight—Vichy as his place of rest.

Mr. Howard himself gave the story of these meetings to Mr. Farish, Standard Oil's president. After his arrival in France, he at first went to Paris. He wrote: ". . . I had several meetings with the representatives of the Air Ministry, and endeavoured to assist them in co-ordinating their programme with the French programme of aviation supplies".

It is reported that at that time the chief of the French military oil supplies was a Standard Oil man. After the fall of Paris he handed over the French oil reserves completely intact to the Nazi executive who was responsible for oil supplies to the German military forces in France. This Nazi oil administrator was in pre-war times closely related to I. G. Farben.

Of course, Mr. Howard could not foresee the early collapse of France. After his departure from Paris Mr. Howard went to

London, where he took part in similar conferences with British representatives. He did not feel too well about these meetings, in view of the fact that simultaneously he was prepared to depart to the secret conference with I. G.

"In view of my close association with these supply problems, both in France and England," he wrote, "I was somewhat concerned about the impression which would be created when it was discovered that I had left these discussions to undertake discussions in Holland with Germans interested in the same problems."

Though Mr. Howard was "concerned", he did not tell the French and British administrators of military oil supplies about his close association with I. G. and the implications of an agreement which he was going to discuss at The Hague. But when he had difficulties with getting a permit for the journey to Holland for the meeting with I. G. delegates, he went to the American Embassy in London and asked for support. The counsellor of the United States Embassy, who heard about the strange request for permission for a visa in order to participate in a special conference with I. G., was "extremely concerned" and "very doubtful whether the Embassy could permit me [Howard] to proceed with my plans". Mr. Howard himself also wrote, "I had the impression at one stage that they were contemplating calling in my passport". But some intervention helped. "After discussion with the Ambassador [Mr. Joseph P. Kennedy], however, the situation was cleared completely. It was agreed that I was entirely within my rights, and futhermore, that the Embassy would not only permit me to go, but would take the necessary steps to explain the situation to the British Foreign Office, in order to relieve me of all embarrassment and to facilitate my obtaining the required permits for leaving and re-entering England."

This amazing document Mr. Howard wrote about his mystery trip should be more fully quoted. The italics are the author's.

"October 12, 1939

REPORT ON EUROPEAN TRIP

"Mr. W. S. Farish
Rockefeller Plaza.

"Dear Mr. Farish:

". . . I also had several meetings with the representatives of the [French] Air Ministry, and endeavoured to

assist them in co-ordinating their programme with the French programme of aviation supplies.

"In view of my close association with these supply problems, both in France and England, I was somewhat concerned about the impression which would be created when it was discovered that I had left these discussions to undertake discussions in Holland with Germans interested in the same problems. Both for this reason and because I required help to obtain the necessary permission to go to Holland, I called on the counsellor of our Embassy in London and explained the situation to him. He was extremely concerned about the matter, and very doubtful whether the Embassy could permit me to proceed with my plans. *I had the impression at one stage that they were contemplating calling in my passport.* After discussion with the Ambassador, however, the situation was cleared completely. It was agreed that I was entirely within my rights, and furthermore, that the Embassy would not only permit me to go, but would take the necessary steps to explain the situation to the British Foreign Office, in order to relieve me of all embarrassment and to facilitate my obtaining the required permits for leaving and re-entering England. The gentlemen in the [British] Air Ministry, who I think had a suspicion of the nature of my activities in Holland, also very kindly offered to assist me in re-entering England, if the Foreign Office should make any difficulties about my return, since they stated they wanted to have a final discussion with me before I left for the U.S. In appreciation of this evidence of confidence, I offered, through the Embassy, to conduct all of my discussions in Holland in the presence of a member of the staff of the American Legation at The Hague. This was not required of me, however.

"Pursuant to these arrangements, I was able to keep my appointments in Holland, where I had three days of discussion with the representatives of the I. G. . . . We did our best to work out plans for a modus vivendi which would operate through the terms of the war, whether or not the U.S. came in."

When the author discussed this blitz trip to Europe with Mr. Howard, the latter indicated that through Joseph P. Kennedy, United States Ambassador in London, "the British" were informed about Mr. Howard's planned meeting with I. G. executives, but at that time the close association between I. G. and Standard Oil interests was known only in part.

Mr. Howard never sent a full report to London on the outcome of the conference at The Hague. He claimed, however, that he informed the State Department in Washington on the planned "sale" of two thousand I. G. patents to Standard Oil. This transaction was only part of the new agreements, and could not be kept a secret. The full implications of the negotiations in Holland were not known in Washington. Mr. Howard wrote, for instance, to Mr. Farish that he received an immediate permit for the transfer of the I. G. patents because "the Department had in its files at Washington a full statement of our relations with the I. G. on these patent matters, which I had worked out with Ambassador Gibson in Berlin in September of 1938". But this statement concealed the existence of Jasco, though Jasco was the main link between Standard Oil and I. G. in the field of synthetic rubber.

W. S. Farish, president of Standard Oil of New Jersey, stated before the Truman Committee:

> "Our contracts [with I. G. Farben] of 1929 were to run until 1947. As you, gentlemen, doubtless know, contracts such as these are not in law abrogated, but merely suspended when the parties' nations are at war. The parties to such contract must therefore find some way of getting along with their own business while the contracts are so suspended."

In other words, I. G. Farben and Standard Oil expected that in case of war their contracts would merely be "suspended", and be resumed after the war. Of course, I. G. Farben is working for the war effort of the Third Reich, and Standard Oil for the war effort of the United States. But, according to the above statement, the contracts were to be continued after the war. In such a case war-time policies are inevitably affected by considerations of expected post-war collaboration. Thus the question arises: How far did I. G. Farben and Standard Oil promise mutual assistance to each other for the preservation of their world-wide joint stake during World War II?

Certain one-sided transfers of property rights seem to indicate that there may have been a wider understanding on war-time policies which were to lay the ground for a private post-war settlement.

CHAPTER VIII

TESTING GROUND IN APPEASEMENT

MR. HOWARD went to the Netherlands as representative of a private world empire. But for the Nazis he was also an important political force that seemed to be able to influence United States government policies. Thus we may find a clue to an understanding of one of the mysteries of Nazi diplomacy during the first stage of the war and to "the nature of my [Mr. Howard's] activities".

Standard Oil was Hitler's testing ground in appeasement. This American company seemed to confirm the Nazi assertion that the capitalist "have" Powers would never go to war and would always be willing to compromise because they wanted to protect their huge vested interests.

Mr. Howard, leading executive of Standard Oil, for instance, still believed in the peace assurances of I. G. executives during the conference in Holland after the beginning of the war. He was once asked by the author on what basis he himself and the I. G. executives with whom he negotiated could redistribute world markets and patent rights after the start of the war. He indicated that he and the I. G. representatives as well were convinced that Nazi rule in the greater part of Europe would not be resisted by the other big Powers. Therefore the only major change resulting from this war would be German expansion in Southeastern and Eastern Europe.

Did I. G. Farben and Standard Oil take it for granted that the war would end with a Nazi victory? Then most world markets would automatically have fallen under control of I. G. Standard Oil conceded such an outcome of the war by granting Latin-American and Japanese markets to the German trust.

When I. G. and Standard Oil representatives met in Holland in October, 1939, they did not foresee the early collapse of France. Later, when France fell and Britain withstood the Nazi air attack, the Nazis were masters of the European continent without having succeeded in winning the war. Again I. G. was able to negotiate a re-division of the world markets which fully acknowledged the new Nazi conquests.

Mr. H. W. Fisher, manager of Standard Oil Development

Company, stated expressly on January 20, 1941, that the new agreement with I. G. should acknowledge Nazi control of markets in South America and Japan.

> "It should be noted that we cannot presume inability of the I. G. to deliver. It is, therefore, necessary to refer South American and Japanese customers to the I. G."

With each new stage of the war, a re-division of the world was decided as if a separate peace between the private empires were possible.

I. G. Farben, for instance, expressed at the beginning of February, 1941, "the keen desire to have France included in the area in which hydrogenation patents are reserved to them rather than in the area in which hydrogenation patents are reserved to the Hydrogenation Patents Company".

The Royal Dutch Shell Company, which had a minority share in the control of the oil processes, "seemed reluctant, or perhaps under pressure of the British Government has been unable, to entertain favourably this proposal". Mr. Howard, in the name of Standard Oil, however, "believes matters had reached the point where they may yield". In other words, as a result of the conquest of France, the German chemical trust had gained control of the French markets, and this should be acknowledged as a permanent affair. An inter-office memorandum of Standard Oil on the results of a meeting of the Executive Committee of Standard Oil on February 24, 1941, declared, as revealed by Thurman Arnold, in a statement made before the Truman Committee: "Committee felt it would be advantageous to effect the arrangement suggested by the I. G."

When, after the defeat of France, the war did not end with a victory for Hitler, the Nazis still made great efforts to utilize the former business associates of I. G. in foreign countries in order to reach a second Munich agreement.

I. G. was allowed to expand in conquered countries as a "private" trust. The French and Czech and other chemical works of conquered and "hostile" countries were not "expropriated", but "bought up" by I. G., and were paid for with bills requisitioned by the German Army or freshly printed in the occupied countries. Then Mr. Farish considered it good policy to transfer Standard Oil properties in France to I. G. Of course, I. G. could not take over American property without a special permit by the Nazi authorities.

Many facts quoted in this book lead to the conclusion that I. G. had offered some kind of separate peace to Standard Oil: "You will appease us, and in return we shall grant you a privileged protection of your interests in countries controlled by us, besides giving you exclusive participation in the exploitation of our patents and helping you to gain special rights in your own country".

A strange situation arose. Germany was blockaded. The United States was closely allied with Britain before war between the United States and the Reich had been officially declared. I. G. was turning out explosives and other vital war materials with which the Nazis tried to control the seas, to cut off Britain from America, and to establish their new world rule. During this period I. G. still sent its cables to New York instructing Standard Oil concerning patent agreements with other American firms--agreements which were of vital importance for America's war economy.

What could the I. G. Farben executives have thought when they, from their headquarters in Berlin, amidst a world at war, still found it possible to use their American patents to interfere with the production of strategic materials in America? It was apparent that the will to appease the Third Reich was very strong indeed on this side of the Atlantic.

The German chemical trust, for its part, had concluded its war-time agreements as a kind of assurance against war risks. Such agreements represented an attempt to ensure that, whatever the outcome of the world conflict, the I. G. world empire would survive.

Did some of the leading executives of Standard Oil harbour similar ideas? If so, when did they discard such conceptions?

W. S. Farish, president of Standard Oil, stated at the stockholders' meeting on June 2, 1942: "I never had any idea that the I. G. Farbenindustrie, as an organization, was hostile to the United States". This statement was made in answer to a question of Mr. Howard W. Armbruster, holding a proxy of a minority stockholder, who had asked Mr. Farish, "Would you or the other officers of the company desire to state to this meeting when you first became convinced or suspicious that the activities of the German I. G. Farben in its relationship to Standard Oil of New Jersey were hostile to the national security of the United States? At what time did you first become suspicious of that fact?" Mr. Farish thought that the question was not "proper"; Mr.

Armbruster then came to the conclusion, "You don't care to answer the question. That is satisfactory."[1]

We may assume that Standard Oil no longer feels committed to arrangements which granted a dominant position to I. G. in the latter's partnership with Standard Oil. Mr. Howard has assured us that Standard Oil would even welcome an additional "consent decree under which all relations with the I. G. under those [pre-war] contracts are brought to an end. . . . The contracts are all terminated. Every obligation of either party to the other in the agreements in question has been terminated."

Agreements which were signed with the understanding that the spirit of the contract was more important than the legal obligation and that mutual assistance was to be given under all circumstances may or may not have become obsolete. Interest in the preservation of private world empires still exists on both sides of the Atlantic. It has resulted in actions which Standard Oil executives may consider today major blunders or "miscalculations". These actions have certainly resulted in costly delays of new technological developments, essential for war production.

CHAPTER IX

WAR-TIME SALE OF TWO THOUSAND I. G. PATENTS

THE TRANSFER of about two thousand American patents belonging to I. G. Farben and to Standard Oil deserves special consideration, for these patents affect numerous processes vital for the future development of techniques in most industries in this country. During the first year of the war several hundred of these patents were transferred in greatest secrecy to W. E. Currie, an executive of Standard Oil Development Company, a subsidiary of the New Jersey corporation.

At first, Standard Oil did not make this important transaction public.

The author spoke to one of its leading executives on the transfer of these patents in July, 1941, when this transaction was not yet a matter of public record. Then he was told that the

[1] See Appendix, p. 160.

transfer was only a "formality" because most patents had always belonged to Standard Oil.

When in 1941–42 the Department of Justice investigated these and other "business deals" between Standard Oil and I. G. Farben, the transfer of the patents from I. G. Farben to Standard Oil became generally known.

The *New York Times* (May 5, 1942) commented on the above transaction as follows:

> "The company [Standard Oil] gained for this country more than it gave away."

This is a strange statement indeed. The writer of this comment admitted that he did not know what I. G. Farben or Hitler received in return for the two thousand patents. "Hitler must have felt that he was getting a fair return; perhaps that he was getting the better of the bargain." As a matter of fact, Hitler or I. G. Farben did not give away anything when the two thousand patents were turned over to Mr. Currie and to Standard Oil. The text of the patents was no secret. They would have been automatically expropriated by the United States government and offered to all American industries to be used by them if they had remained I. G. Farben property in the United States.

Standard Oil itself later defended the "acquisition" of the two thousand patents by stating that the company wanted to protect its own share in the patent rights against the risk of losing them to the Alien Property Custodian if they were pooled with "enemy property". Thus these patents became one hundred per cent Standard Oil property, though I. G. was promised it would get its share in royalty payments from eventual exploitation of the patents after the war.

The story of the two thousand patents is still more interesting from another point of view. It seems that the transfer of the patents was part of a larger deal whereby I. G. Farben prepared certain post-war settlements with Standard Oil.

Mr. Howard, who handled this transfer of the patents for Standard Oil and who must have known what agreements existed between the American oil and the German chemical firm, has given us a few hints concerning post-war arrangements which, of course, must not be upset by war-time actions.

In the testimony before the Truman Committee, Mr. Howard's transactions were clarified:

SENATOR O'MAHONEY: "Now I want to quote from the

testimony of Mr. Farish [president of Standard Oil of N. J.] given here the day before yesterday. When he was describing to the committee the arrangements which have been made to settle this difficulty arising from the fact that the United States is now engaged in a war with the government which controls I. G., Mr. Farish said—I am quoting:

> "'I. G.'s representatives agreed to this only on condition that their financial return would not be less than under the old arrangement. Since there was no possible method of immediately appraising the financial outcome of this trade, we agreed to a future readjustment which would work out the same financial result as the old arrangement, if it should appear at any time that the trade had been inequitable.'

"Inasmuch as you have taken over some two thousand patents from I. G., and by the testimony of Mr. Farish you have agreed with I. G. to make a future adjustment with respect to that matter, I want to ask you who owns these two thousand patents, I. G. or Standard?"

MR. HOWARD: "Is that question directed at me, Senator?"

SENATOR O'MAHONEY: "Oh, yes, Mr. Howard; you are the patent expert."

MR. HOWARD: "I don't think there is any question, Senator, that we own those patents."

SENATOR O'MAHONEY: "Will you own them after the war?"

MR. HOWARD: "Yes, sir, we will."

THE CHAIRMAN: "Were they given to you in consideration of that $30,000,000 you spent for the original patents?"

MR. HOWARD: "In consideration of that, we acquired a three-eighths interest in most of the processes relating to the oil-chemical field and an 80 per cent interest in the other processes. To accomplish this particular arrangement in 1939, we also surrendered the three-eighths interest we had in the countries outside of England, France, and the United States."

THE CHAIRMAN: "Is there any equitable arrangement which has to be met after the war with regard to these two thousand patents?"

MR. HOWARD: "The only arrangement which has to be met, Senator, is a simple matter of money payments. The I. G. could claim after the war, if the contracts were still running, an accounting, and say: 'You made so-and-so much money out of these patents in these three countries. We made so-and-so much

in the other countries. Under the original contract which you traded us out of in 1929 we would be entitled to a greater sum than we got. That trade you made with us in 1939 wasn't fair, and you have to pay us so-and-so much money.'

"That is the position that the I. G. were in, and it can't be helped. That claim cannot be made during the war for obvious reasons, and if it were made it would be subject to the control of the Alien Property Custodian. If made after the war, Senator, I don't know what the facts would be as to it."

Thus a peculiar situation exists: Standard Oil is the official "owner" of I. G. patents, but the profits which derive from their use must eventually be transferred to I. G. Farben (after deduction of counter-charges by Standard Oil). I. G. Farben can thereby claim a share in profits reaped in America's war industries during this emergency by Standard Oil. It is, according to Mr. Howard, "a simple matter of money payments". These are, however, not so simple as Mr. Howard would want to make them appear. The patent agreement seems to be in accordance with an arrangement which was to synchronize I. G. and Standard Oil world policies.

Such an assumption would be in accordance with a personal statement of Mr. Frank A. Howard in a confidential letter written from Europe after his conference with I. G. Farben executives at The Hague, shortly before the invasion of the Netherlands, on the result of his deal with I. G.: "*A* modus vivendi [between I. G. Farben and Standard Oil] *which would operate through the term of the war, whether or not the United States come in*".

What was the "modus vivendi" to be? Mr. Howard made it clear in another statement before the Truman Committee. A synchronization of Standard Oil and I. G. Farben policies during the war, in preparation for a post-war settlement and in order to safeguard both parties' interest in war-time was the main topic of his conference at The Hague.

> "Whatever the sentiments of parties may be, war does not abrogate contracts of this kind. It only suspends them. Each party is, therefore, left with the obligation of finding some way to live and conduct his own business during the period in which this contract is suspended." (Mr. Howard.)

The assignment of the two thousand patents did not end the dependence of Standard Oil or of other American companies on I. G. patents in the United States. Standard Oil even felt obliged

to ask I. G. for a special permit to make use of a patent which was formally assigned to the Jersey company. On September 11, 1940, about a year after the start of the European war, and after the assignment of the two thousand I. G. patents to Standard Oil, Mr. W. E. Currie of the Standard Oil Development Company wrote to the I. G. agent in New York:

"Dear Dr. Butler,

"On June 29, 1940, we wrote to Dr. Hochschwender with reference to the possibility of arranging with the I. G. for a licence under the above-mentioned U. S. patent, which comes under the AD class of the four-party agreement. On July 3 you replied advising that our suggestion in this connection had been forwarded to the I. G. . . . The patent in question is one of those which has been assigned to us. Our dealings with Du Pont would be facilitated if we could advise them that we have the exclusive right to use the invention covered by the patent. . . . If you think proper, would you be kind enough to cable to I. G. in an endeavour to secure an answer to the proposal which we made in our letter of June 26.

"Very truly yours,

"W. E. CURRIE."

This letter indicates that there are still other agreements on patents which are formally the property of Standard Oil, but which could not be licensed without a specific permit by I. G. Mr. Howard explained this strange situation as follows:

"The patent was one of those to which we [Standard Oil] had no right to assignment, and if we received an assignment at any time it would be subject only to agreement made at that time as was proposed by Mr. Currie at that time." (Testimony before the Truman Committee, April 2, 1942.)

The hasty transfer of patents and other interests which I. G. assigned to Standard Oil and Standard Oil to I. G. was a transaction which depended on a final settlement after the war, with the implication that both parties would wish to co-operate again on a world-wide scale. Relations would be resumed with one underlying idea in mind: Even if other empires should collapse, the Farben–Standard Oil empires should be kept intact.

Such hopes were still alive after the outbreak of the war. This must also be concluded from strange incidents with which we shall deal in the following chapter.

CHAPTER X

HITLER'S $23,000,000 OFFER TO STANDARD OIL

AFTER TWO years of war, with most of continental Europe, and particularly Hungary, under firm control of the Nazis, I. G. Farben executives in Berlin telephoned Mr. Howard in New York in order to communicate an offer of I. G. Farben to "purchase" Standard Oil's plants in Hungary, and to pay an exceedingly high price for them, mostly in cash. These Hungarian properties were already in possession of the Third Reich, and probably even of I. G. It was obvious that such an offer did not come from the headquarters of I. G. Farben, but from the Wilhelmstrasse, the Foreign Office of the Nazi government.

What was the purpose of this proposal? Was it made in execution of other arrangements, or in order to create a precedent for the acknowledgment of Nazi pillages in Europe? Payments would be in gold and currencies which were part of the Nazi booty in occupied countries.

An inter-office memorandum of Standard Oil about this offer, which was approved by a member of the State Department, but finally vetoed by the Treasury, told the story of the strange gift the Nazis were willing to present to Standard Oil during the war.

Memorandum

"Several months ago the I. G. Farbenindustrie inquired over the telephone whether we would be interested in selling our producing property in Hungary. This property, which produced in 1940 1,935,000 barrels of oil, is owned by a Hungarian corporation (Maort) which is in turn 100 per cent owned by the European Gas and Electric Company, an American corporation, subsidiary of Standard Oil with a minority interest. After referring the question to the State Department, we told I. G. that we would be willing to discuss the question with them, and they stated they would send a representative to New York for the purpose. Their representative Mr. Penthal proceeded to Rio de Janeiro but was unable to get a visa to visit the United States. Mr. Harden, Vice-President of our company, went to Rio for the purpose of ascertaining what proposal would be made.

"The best offer from the I. G. Farbenindustrie, which from our standpoint is highly acceptable, was to buy all of the shares issued by Maort and to pay us the following:

Gold, probably mostly German coins	$13,500,000
Swedish kroner, Swiss francs and/or Central or South American currencies	5,000,000
Promissory note of I. G. Farben	5,000,000

"This promissory note will be payable in U.S. dollars with interest three months after the end of the war, and will recite that due payment of the instrument will be guaranteed by collateral represented by the American holdings and assets of the I. G. Farbenindustrie.

". . . If the sale of our Hungarian property were approved by the U.S. Government in principle, then we would expect to be successful in obtaining a navicert from the British Government concerning the consignment (gold from Lisbon).

". . . This premise was accepted by Mr. Ray Atherton, Chief of the Division of European Affairs, Department of State, with whom the matter was first discussed several months ago.

"August 19, 1941."

Standard Oil tried to persuade the United States government to believe in Hitler's word and to be satisfied with the naïve "assurance" that Hitler would use "old German coins" instead of the booty from occupied countries for the transfer of gold from Nazi Europe to America. Standard Oil wrote in a letter dated January 19, 1941, addressed to "Henry A. Wallace, Chairman, Economic Defence Board": "The question has been raised as to the origin of the gold. On this point we have been assured that the gold to be delivered to us in payment at Lisbon would be a part of the original gold reserve of the Reichsbank, would be drawn wholly from within Germany, and probably would be largely made up of old German coins."

Mr. Farish correctly stated that any money the Nazis paid for works which they already owned and used—with or without official property titles—seemed to be "found money" for the United States. He did not question the reasons which induced the Nazis to let I. G. make the generous offer.

Did the Nazi government at that time still believe that Standard Oil was the decisive power in United States policies and could be

influenced by Nazi generosity? Or did I. G. want to fulfil some obligation as part of a greater deal?

Part of the answer may be given if we examine Standard Oil and I. G. Farben activities in Latin America during the first stage of the war.

CHAPTER XI

OILING THE NAZI MACHINE IN SOUTH AMERICA

WHEN THE mysterious offer of I. G. to "buy" Standard Oil's Hungarian works was cabled to New York, Standard Oil still was supplying aviation gasoline to the German and Italian air lines in South America, then the only link between Nazi Europe and the Western Hemisphere. Thus the Nazis, until late in 1941, were able to circumvent the British blockade and to send Gestapo agents, I. G. representatives, and strategic materials to and from Europe.

Mr. William La Varre, Chief of American Republics Division of the State Department, testified before the Truman Committee on April 3, 1942, as follows:

> "The Lati Airline is a line that was established under the patronage of the Nazi Government as an outcome of the conference at Stuttgart in 1939. At that time, Hitler had called all his German agents to Germany for a conference, and they reported that the Germans were not getting so far in political relations in Latin America, and they decided to give the Italians the opportunity of starting a trans-Atlantic airway, and that line was called Lati, to make it simple, and it runs from Rome. It started to run from Rome, Italy, through Spain, down the coast of Africa, using the Cape Verde Islands as a base, then across from Dakar to Brazil, and then to Argentina.
>
> "The Lati Airline secured the type of fuel that it had to have to make that terrific jump across the Atlantic, 1680 miles with a heavy load—they had to have gasoline that had between 87 and 100 octane, and the only place they could get that gasoline was from the Standard Oil Co. of New Jersey and its subsidiaries in South America."

According to the minutes of an Executive Committee meeting of Standard Oil, the latter was fully informed about this situation:

"Mr. Harden reported, for the information of the committee, that supplies of aviation gasoline are being made available by our interests to the 'Littoria' [Italian aviation line] at Rio de Janeiro. A local, apparently Nazi-supported, newspaper in Rio has publicized this fact as indicating that the supply of material quantities of aviation gasoline at that place to the Italian Line is enabling a movement of mail, et cetera, from Axis powers to the Western Hemisphere around the British blockade, and speculates whether the British would be impelled to interfere with the tank steamer bringing that material from the Caribbean to Rio."

Thurman Arnold expressed his view on the attitude of Standard Oil as follows:

"In reading the Standard documents one has the feeling that it is impossible to determine what conduct patriotic American companies may be forced into by the cartel arrangements".

This charge was vigorously denied by Standard Oil. Mr. Farish asserted before the Truman Committee:

"Deliveries to the Italian airline in Brazil in 1941 were discussed with the State Department and with the American Embassy at Rio de Janeiro. No delivery was made except in conformity with the policy of the Department. . . ."

Apparently there were conflicting influences within the State Department, for the above contention was upheld by a statement from that department presented by Mr. Farish when testifying on August 20, 1942, before the Senate Patents Committee. The statement asserted that: "Mr. Farish's testimony in this regard is correct".

Standard Oil issued an additional declaration which made it appear as if Standard Oil only waited for a government action "compelling" it to stop deliveries to the Nazi-Italian air line, thus freeing it from the stigma of being "unfriendly" to the Nazis, in order to avoid a suit of Condor against Standard Oil for "breach of contract".

"In October, 1941, when the State Department raised the question of stopping deliveries to the Condor [German-owned

air line in Brazil], the liability of Standard Oil Company of Brazil to Condor for breach of contract was pointed out. The threat made by the State Department to blacklist the Standard Oil Company of Brazil put that company under compulsion, thus giving it a defence against any suit which Condor might bring."

The Standard Oil Company of Pennsylvania also advised its customers in a special letter signed by its president, Mr. R. N. Keppel, that Standard Oil had supplied Axis lines in Latin America only in agreement with the State Department.

Yet representatives of the State Department had testified that Standard Oil did not act in accordance with government policies. The ordinary laymen will not find it easy to make his way through this tangle of conflicting testimony. A possible hypothesis, of course, is that one branch of the State Department was either ignorant of what another branch was doing or was working at cross-purposes to it.

Standard Oil cannot claim that it was under contractual obligation to supply gas to the Nazi-Italian air line Littoria at Rio de Janeiro. Mr. Harden reported to an Executive Committee meeting of Standard Oil on February 17, 1941, that:

"The present inquiry involves 2,500 barrels (six months' requirements) of aviation gasoline from Ali Littoria, to be delivered into customer's storage in bond in Rio de Janeiro. *While there is no contract covering this business, the customer has been a regular customer.* In view of the complications surrounding this matter, Committee was of the opinion that the quotation should be given f.o.b. Aruba, and not c.i.f." [Author's italics.]

Furthermore, the earlier testimony of William La Varre, member of the Latin-American foreign service of the State Department, before the Truman Committee, had indicated that Standard Oil did not always co-operate with the State Department and that it had tried to follow an independent foreign policy. We quote from the record of the Truman Committee:

SENATOR MEAD: "I am a little confused, because if I remember the Standard Oil's testimony, they very readily and spontaneously conformed with every Government requirement. Do I understand you to say that some firms withdrew their supplies voluntarily quite some time ago from these Nazi firms, and that Standard

Oil was not in that list that volunteered to withdraw their supplies?"

MR. LA VARRE: "Yes, sir. We had the Intelligence reports on every agent and all the Axis business. We took six months and had men go around the United States calling on the president of every concern in Latin America, explaining to him what we had found, either that his employee was a German or a Nazi sympathizer, or he was in the employ of and giving money to the German embassies: and the record shows that 89 per cent of all the American businessmen that were called on voluntarily stopped immediately, in some cases at big losses because the Germans were good firms; they could sell them. As Sterling Products always said, they sell better than anybody else.

"But some of the American businessmen, 89 per cent of the American businessmen, were willing to take the loss and find some other agent and build it up again."

SENATOR MEAD: "Was Standard in that 89 per cent?"

MR. LA VARRE: "No, sir; Standard was in the other."

SENATOR MEAD: "Did I understand you to say a moment ago that you warned them on several occasions?"

MR. LA VARRE: "Twice."

SENATOR MEAD: "And they still persisted?"

MR. LA VARRE: "Yes."

SENATOR MEAD: "That doesn't seem to conform with the most co-operative spirit expressed by the Standard witnesses to the committee."

MR. LA VARRE: "My only experience is, I have spent many years in Latin America and have seen Standard Oil operating in all the countries, and there is never any co-operation either with our foreign ambassadors or with the State Department or with the Commerce Department."

SENATOR MEAD: "Never any co-operation?"

MR. LA VARRE: "Never any."

A. A. Berle, Jr., Assistant Secretary of State, confirmed the above testimony. Finally, on October 23, 1941, as the result of the strong intervention of the State Department and the threat of blacklisting Standard Oil companies, Mr. Farish informed the State Department that the New Jersey company would in future "co-operate with the Department in every respect and wholeheartedly".

These oil supplies to the Nazis in Latin America were only an incident at the time when Standard Oil apparently still believed

that the Nazis would be victorious in World War II. Such an outcome can no longer be expected. What, then, will be the fate of the patent monopolies and of the control of synthetic processes which form the basis for the international pools with I. G. Farben as a dominant factor?

These questions will be answered only if we investigate the war-time development of new industrial processes which are of strategic importance and which were under control of Nazi corporations. Such an investigation, unfortunately, cannot be reassuring to those who would gladly believe that American industry has been mobilized one-hundred-per-cent behind the national war effort.

CHAPTER XII

THE SECRET OIL INTERNATIONAL

MUCH HAS been written about chemical developments which have enabled Germany to produce synthetic oil. But new technique is only part of the war-time story of oil. Patent monopolies and an alliance with private world empires made it possible for the Nazis to increase their oil reserves before the outbreak of war, to raise their own production and intensify supply difficulties in regard to aviation gasoline in foreign countries—even in America. They actually succeeded in making foreign states pay for the oil which helped to bomb them.

The mystery role of oil which will be described in this chapter is attributable only in part to the fact that the oil and chemical industries have become closely interwoven. The special "information" submitted to the United States District Court for the District of New Jersey by the Antitrust Division of the Department of Justice in its complaint against the Standard Oil of New Jersey stressed the new strategic role of oil as a result of chemical developments. It asserted:

> "Today a wide variety of chemical products can be manufactured from petroleum and petroleum derivatives, and by-products of the petroleum industry, formerly considered of little importance, or as actual waste, have been found of extreme usefulness in the manufacture of chemical products. Thus

explosives, fertilizers, alcohols, solvents, plastics, synthetic rubber, wetting agents, as well as a wide variety of other chemicals, can today be produced more economically from petroleum than from any other source.

"This revolutionary development in the petroleum business, which was at one time confined to the production of gasoline, kerosene, and various fuel oils, has resulted in the extension of the petroleum field into the chemical field. If the normal development of the art had been followed, petroleum companies today would be engaged in manufacturing chemicals, and chemical companies would be engaged in the manufacture of synthetic petroleum products. In the later years of the third decade of this century these new developments in the petroleum field did not escape the notice of the leading chemical and oil companies. A direct result of this fact was the combination and conspiracy hereinafter described. In that combination and conspiracy, Standard and I. G. were the principal parties."

The new technique which was hamstrung by the "conspiracy" was initiated in Germany during the First World War. At that time I. G. chemists discovered that gasoline could be produced from coal by adding hydrogen. This "hydrogenation process" also made it possible to achieve up to a hundred per cent conversion of crude oil into any kind of gasoline, lubricants, or other oil products.

Therefore hydrogenation has a magic spell. It stirred the imagination of oil executives even before they knew whether the synthetic process was still only a paper formula or had become practical. Ordinarily, cracking of crude oil always leaves at least 50 per cent of crude oil in the form of heavy oils or fuel—products less in demand than gasoline. Hydrogenation was the ideal solution to the problem of how to adjust gasoline production to crude-oil output.

Synthetic production of high-octane gasoline was in an "experimental" stage at the beginning of the war, whereas it had already reached the mass-production stage in Germany. As a result, America, the greatest oil producer in the world, faces the danger of an acute shortage of aviation (high-octane) gasoline. The shortage does not arise from transportation difficulties, but from insufficient production. Standard Oil, which holds the decisive patents for manufacture of high-octane gasoline, announced at the beginning of the war that it could provide for

sufficient supplies of aviation gasoline. This promise could not be fulfilled.

How are we to explain the fact that in the field of synthetic oil production the American partner of I. G. was not prepared for mass production? Oil was the basis for the world-wide success of Standard Oil of New Jersey. It controlled the oil patents outside of Germany, and was able to prevent competitors from developing similar processes of their own. For many years Standard Oil had been promising that its hydrogenation had freed us from the danger of a shortage of high-octane or aviation gasoline. When the war began one could have assumed the demand for these high-grade gasolines would rise sharply. The question remained whether new facilities for production should be created outside the domain of Standard Oil enterprises. But Standard Oil announced that it could meet all needs.

It must be emphasized that processes similar or even superior to I. G.'s have been discovered in other countries. I. G.'s only advantage was that of claiming some basic patents at an earlier date than any competitor. I. G. attempted to use these patents in order to make the powerful Standard Oil finance both further experimentation in synthetic-oil production inside Germany and Nazi imports of oil.

Another competitive process which Standard Oil completely neglected in the past has already become of even greater practical importance. This is the Houdry process, which is competitive with Standard Oil and is used by numerous plants today. It seems to shorten the time for the expansion of production and to reduce costs for gasoline. Standard Oil has in the past declined to make use of this process, which has been developed by an independent inventor and applied by Sun & Socony. Quick expansion of the capacity to produce synthetic gasoline is possible under two conditions: If the facilities of the entire oil industry are used, and if the whole chemical industry is allowed to participate in the task of creating a new industry. It seems that the vast experiences of chemical works are not utilized for this purpose.

Chamberlain's "appeasement" of the Third Reich was apparently only a pale shadow of the appeasement policies of Standard Oil and Shell according to recent charges made by the United States government.

The German chemical trust was to be granted a share in royalties on high-octane gas equal to that of Standard Oil.

This tax was to be paid by consumers of the "strategic" aviation gasoline throughout the entire world. The royalties were decided upon just before the outbreak of the war, and the grotesque situation arose whereby the Royal Air Force paid a royalty to I. G., and thus to the Nazis, for its aviation gasoline. The war-time transfer of this money was difficult, so a temporary arrangement was prepared by which Standard Oil acted as I. G.'s trustee, retaining the German company's share in royalties "for the duration"—to be paid after the war.

This may, indeed, sound fantastic. But the government's charges are explicit.

The international control of hydrogenation and synthetic-oil developments by I. G. and Standard Oil had been endangered by new discoveries made by independent groups. Thus the plan for the formation of the C. R. A. (Catalytic Refining Association) arose. The short history of the C. R. A. is perhaps the most revealing oil story of World War II. According to the Department of Justice, Standard Oil promoted the C. R. A. in 1938, to "acquire control of the new catalytic cracking, refining and reforming process, and to utilize its position in H. P. [Hydro Patents] and its domination of the hydrogenation process and its possession of the present and future backing of I. G. to extend the control and the restrictions of the hydrogenation agreement to the broad field of new refinery operations covered by the new process".

The idea was to agree upon an exchange of information of patent rights, on favoured royalty rates, and of course in defence of their own "patent rights against competitors and infringements". Indirectly, the Anglo-Iranian Oil Company, Shell, and Texas were also participating in these negotiations. Standard Oil strategy at this point, beginning in October 1938, tried to bring together Standard Oil, Shell, and I. G. Such a combination could apparently not be challenged by an outsider. The second draft of the charter of the C. R. A. (August 15, 1939) provided for Shell, Texas, and Universal to join the C. R. A. as active partners.

Competitive development of the new production was to be prevented. But how was this possible if the patent monopolies were not sufficient safeguards against equally effective or even better competitive processes? In a few cases potential competitors were persuaded to hand over their patents or processes to the C. R. A. or to join it as members. But this watering of the international monopoly could not be permanently continued without reducing the share of the original founders of the C. R. A.

to a negligible figure. Such a decay of the world monopoly could be prevented only if the official governments backed it and actively intervened against potential competitors. In other words, this international cartel could guarantee the monopoly rights of its members only if they could rely on the aid of the state.

M. W. Kellogg, an American participant in the new oil cartel with I. G. and Ruhrchemie, emphasized the fact that they were practically dealing with the German government when they signed contracts with I. G. and Ruhrchemie. Kellogg wrote on June 18, 1937, before the final international agreements were drafted: "I further wish to draw your attention to the fact that the Government has taken material control over all patents in Germany to be used for the best interests of all concerned, including the Government".

It is obvious that governments which pursue such a policy must themselves be protected against public criticism. Therefore the following facts gain an especially sinister importance.

1. The first agreement of the C. R. A. was drafted immediately after the Munich pact between Chamberlain and Hitler (October 12, 1938). The last revised draft was negotiated in 1941, after almost two years of war in Europe, with Hitler in control of the greater part of the Continent.

2. These agreements were known to the Nazi government, while the governments of the United States and Great Britain were not informed. The Antitrust Division of the Department of Justice got knowledge of the international "deal" only during a later period, as a result of its own investigation of the activities of Standard Oil and I. G. Farben.

3. I. G. was to be a prominent member of the C. R. A., with an unusually high share in royalties. This was apparently part of the price paid for the aid which the Third Reich would give to the new oil international. When finally, because of the insistence of the British member, I. G. was dropped from the official membership in the C. R. A., I. G. remained in the role of a secret partner who could claim royalties through Standard Oil.

The outbreak of the war in Europe was embarrassing, but did not end the plan to form an oil international with I. G. Mr. Howard asked in a memorandum submitted to a meeting of the Executive Committee of Standard Oil on November 14, 1939:

"How we are going to make these belligerent parties [including Americans, British, Dutch, Germans] lie down in the

same bed isn't quite clear as yet. We are now addressing ourselves to that phase of the problem and I hope we will find some solution. Technology has to carry on—war or no war—we must find some solution to these last problems."

Mr. Howard's conception of "technology" was apparently limited to the formation of a secret synthetic-gasoline international, with Nazi interests as a dominant or "substantial" factor.

On November 3, 1939, Mr. Howard advised the other partners in C. R. A. that Standard Oil had taken over I. G.'s share in Standard-I. G. He withheld the significant fact that I. G. still kept its claims on royalties. Furthermore, I. G. was kept informed and "consulted" on further developments. On January 12, 1940, Mr. Howard wrote to "Dear Fritz" (apparently Fritz Ringer) of I. G. Farben:

"I am enclosing copies of two trust agreements, one dealing with Standard-I. G. patents, the assignments of which were given to me at The Hague, and the other with the Jasco shares. This situation troubled me a great deal because I was afraid that, through the unforeseen operation of past contracts or through inadvertence in drawing future contracts, the patent rights of S. I. G. or Jasco might become intermingled with those of Jersey, and pass to others as a part of general agreements binding Jersey and all of its 100 per cent subsidiaries. It therefore seemed wise to set up some mechanism by which special consideration would always have to be given before any action could be taken which would affect the patent rights of S. I. G. or Jasco. This has been accomplished according to the terms of the Four-Party Agreement, and by placing 50 per cent of the voting stock of Jasco in trust, subject to the terms of the memorandum which we drew at The Hague. I believe these arrangements will fully protect the interests and rights of all the parties."

The character of this "mechanism" has never been disclosed. We can, however, draw our own conclusions from other facts known to us. Mr. Patrick Gibson, a member of the Antitrust Division of the Department of Justice, stated before the Patents Committee that after outbreak of the war, I. G. still received information on technical developments from Standard Oil without any reciprocity.

"Under the terms by which I. G. had authorized Standard to continue the C.R.A. negotiations, I. G. was protected against further disclosures of information, but I. G. continued to receive information from Standard. In the course of the further negotiations with the C. R. A. partners, the decision was arrived at by March 18, 1940, to discontinue further disclosure to I. G. At the time this was decided, and instructions sent out on March 18, 1940, we noticed that Dr. Beller of I. G. was at that very moment in the Standard laboratories and had to be informed of this decision."

Even after having subscribed to this decision, I. G. was still able to control the use of C. R. A. patents in America, and Standard Oil still felt bound to the former agreements with I. G. On July 3, 1940, Standard Oil sent the following cable to I. G. in Berlin: "On the whole, we think agreement is still practically workable and satisfactory but we are increasingly concerned over the basic legal situation".

One week later, Mr. Howard spoke to Mr. Ringer in Berlin over the telephone and "secured his approval to the C. R. A. agreements in the form in which they were initialled by all parties and left with me [Howard] yesterday. The agreements will therefore be released today and the co-operation of parties under the agreements will begin at once."

A special assurance was given by Mr. Howard to a British oil representative in August, 1940, that payments of royalties [in connection with the C. R. A. agreements] would be made to a new company, identified as The Special Company, to be set up and owned 50 per cent by Jersey and 50 per cent by Shell. "No payments are to be made by The Special Company to any German corporation or to any corporation in which any German national or corporation is a shareholder."

The real nature of this promise was commented on by Mr. Gibson before the Patents Committee as follows:

"All of the statements as to stock ownership and as to the immediate recipients of the payments are quite beside the point. Since 1929 the substantial interests in S. I. G., that is, Standard Catalytic Corp., have been governed not by stock ownership but by overriding contract. The ultimate recipients of the payments, Standard and I. G., themselves arranged by contract the corporate intermediaries to receive payments.

The jointly held corporation has been a mere form for carrying out the partnership. After all the formal rearrangements made by Standard and I. G. after outbreak of the war in Europe, the fact remained that I. G.'s interest in royalties was just about exactly what it was before the formal changes."

The German partner did not own mineral-oil resources. It did not produce crude oil, and did not promise to manufacture synthetic oil or refined gasoline for other countries. Its technical experience was not outstanding as compared with the combined experience of all the other partners. I. G. promised, however, to renounce any competition of its synthetic oil with natural oil.

This agreement had a political background. The other oil companies, in partnership with I. G., believed that the Nazi state would respect their interests within the borders of the Greater Reich.

The very day after the conclusion of the "final" settlement of the Oil Powers *à la* Munich, Standard Oil, still according to government charges, made a special arrangement with I. G. which is even more amazing: Standard agreed to finance supplies of crude oil and of aviation gas to the Third Reich. As a result, the Nazis would import these strategic war materials in excess of the limited quantities purchased abroad and paid for in foreign currency or gold. These oil credits of Standard Oil to the Third Reich were to be repaid from the royalties which I. G. could claim in later years as its share in the international oil patent pool.

The complaint of the United States District Court for the District of New Jersey in the civil action against Standard Oil of New Jersey, Jasco, Inc., Walter C. Teagle, Frank A. Howard, etc., states:

"On or about October 13, 1938, Standard and I. G. entered a separate agreement between themselves in respect to the new relationship. This agreement gave to I. G. a royalty share additional to that reserved to it under the Four-Party Agreement between Standard and I. G., assured Standard-I. G. [now Standard Catalysts, a Standard Oil subsidiary] a further period for the exploitation of future I. G. patents under their agreements, and required Standard to advance to I. G. the latter's research expenses. Standard's advance to I. G. was to be made in the form of deliveries of oil by Jersey to I. G. in Germany, and to be repayable only out of I. G.'s royalties resulting from the pool in question."

Thus, if the allegations of the government are correct, it is a permissible inference that Nazi planes which bombed Great Britain in 1940 may have been flown with aviation gasoline supplied by Standard Oil.

Standard Oil also signed agreements aiming at the control of synthetic-oil industry in the United States. Such a policy was necessary in order to make the international monopoly air-tight; it also seemed to be a wise policy because of the uncertainties in international diplomacy. These relations did not necessarily loosen the ties with I. G. The Polymerization Processes Corporation (Polyco), a purely American patent pool, had been formed in 1935, for the control of a new process to produce heavier hydrocarbons (gasoline and other oil products). The members were Standard Oil of New Jersey, Kellogg, Texas, Standard Oil of Indiana, and Phillipps Petroleum Company. According to the contract among these companies, they were to pool their polymerization patents. But Standard Oil did not want to bring into the pool its former I. G. patents. Therefore all knowledge of 1929 contracts with I. G. was kept a strict secret. W. E. Currie, one of Standard Oil's patent attorneys, stated in a memorandum for other Standard Oil executives:

> "If the polymerization agreement is signed with definitions which include the patent rights of Standard I. G. Company, we must arrange to keep the patent rights of I. G. on polymerization and catalytic cracking out of polymerization agreement. Mr. Howard suggests that this be done by a quit claim by Standard-I. G. to I. G. with respect to those inventions, then taking them up in Jasco. There would be a general understanding that the parties will agree to some equitable arrangement for securing the same effect as would have been secured under the original agreements."

Patrick A. Gibson of the Department of Justice therefore concluded before the Patents Committee:

> "To prevent I. G.'s patents in the polymerization from passing on to Polyco, S. I. G. quitclaimed back to I. G. all of I. G.'s patents in this field. Standard concealed from the other parties to the polymerization agreement the fact that it had the right to dispose of I. G.'s patents in this field."

In other words, Standard-I. G. turned back to I. G. all patent rights on gas polymerization, thus withholding them from the American oil industry. I. G. was fully co-operative in a secret deal to raise the claims to royalties at the expense of the other American and British business partners. Of course Standard Oil had to recompense I. G. for the latter's participation in such a secret arrangement.

The business procedure just described indicates an extremely intimate relationship.

I. G. succeeded in obtaining from Standard Oil a private recognition of conquests which the United States government never acknowledged. Thus in March, 1940, I. G. asked for an extension of its right to use synthetic gasoline patents freely within German areas with the specific understanding that these areas included Austria and the former territory of Czechoslovakia. This question came up when I. G. asked Standard Oil to communicate the latest technical secrets or patent rights for the refining of lubricants. Standard Oil had pooled the corresponding patents and technical secrets with three other leading American oil companies (Union Oil Company of Indiana, Standard Oil of Indiana, and Kellogg). The technical experience of these companies was also given to I. G. before and after the beginning of the Second World War. As a result, I. G. or the Nazi government could manufacture more and better lubricants in Germany, Austria, and Czechoslovakia. The latter territories were especially well situated for the construction of strategic works because they cannot be so easily reached by British bombers as targets within the former boundaries of the Reich.

A few days before the "official" outbreak of the war—and when German troops were about to march into Poland—I. G. transferred its holdings of Standard-I. G. stocks to Standard Oil. As a result, Standard-I. G. became a hundred-per-cent American-owned company. A supplementary agreement was concluded, insuring I. G. against any loss in its claim for royalties. These were to be fully paid to I. G. if it remained a partner—the war was not to separate the former associates. This last-named "special agreement" was concealed by Standard Oil from other partners—especially from the British Shell Company, which might have objected to making the British pay royalties to I. G. while the latter was to supply gasoline in preparation for German air raids over Britain. The fact was that part of the money the American Army and Navy—and, in part, also the British—paid

for their aviation gasoline was to be set aside on behalf of the Nazi trust.

If we may credit additional charges in the same case against the Standard Oil Company of New Jersey brought by the government, the Third Reich even obtained, with the connivance of Standard Oil, processes which were guarded as important secrets by American and British companies. We refer in particular to further improvements in the manufacture of aviation gasoline, without which the Nazi air fleet might have been handicapped.

Shortly before the "official" beginning of the war an important discovery was made. Better aviation gasoline can be manufactured if the process of sulphuric acid alkylation, "for making a high-quality blending agent", is applied. It is most extensively used "because of its high economy in operation and its high yields".

The process was a British invention owned by the Anglo-Iranian Oil Company, and controlled jointly with two American companies, Texas and Universal. Standard Oil did not own any patents in this field. It simply threatened to infringe the patent and start independent production, unless it were admitted to the new patent pool. After obtaining, in this way, full knowledge of the new process, Standard Oil, according to the United States Department of Justice, promptly communicated it to I. G. for use in German plants without the knowledge of the original inventors of the process and owners of the patents.

There was, however, always the fear that the other competitors might go into new synthetic production. Therefore, conferring on the possibility of the production in China of synthetic oil from coal, Mr. W. A. Carlisle of Standard Oil wrote to Mr. P. W. Parker of Standard Vacuum Oil [a company owned 50-50 by Socony Vacuum and Standard Oil] on March 18, 1937:

> "In general the production of oil from coal (or tar) is uneconomic. Such anti-economic production is against the interests of the Oil Companies; that in general, therefore, it is in order that the Oil Companies should try to prevent countries getting interested in uneconomic production of motor fuel. If, nevertheless, the Government should be interested in going ahead with synthetic production then the best solution is to apply the I. H. P. process rather than any other solution. That, in other words, if the Oil Companies think it feasible and de-

sirable to start any action to prevent China from going in for synthetic motor-fuel production, they should be very careful not to get from the smoke into the fire, namely if—failing success of the Oil Companies' action—synthetic production should be carried out by competitors, *e.g.*, Fischer, instead of under licence from I. H. P."

This Fischer process was finally absorbed by the Oil International as a result of an agreement among "the principal parties, Standard Oil, Shell, Ruhrchemie, I. G. Farben and Kellogg". Thus two American oil concerns and the leading British-Dutch oil concern were combined with the German chemical trust and the leading German magnates of the Ruhr, the heart of German armaments productions, where the main funds for the financing of Hitler's ascendancy to power had been raised. Again the Nazi concerns kept for themselves their exclusive rights for the unlimited exploitation of the new processes within the Reich, while I. G. remained a leading partner in the companies which controlled the new industrial developments in America and the rest of the world (outside of Germany). The American rights were taken over by a newly founded Hydrocarbon Synthetic Corporation, with 50 per cent of the stock of the new company going to Standard-I. G., 25 per cent to Kellogg, and 25 per cent to Shell. Ruhrchemie was satisfied with a mere share in royalties.

The rights outside of the United States, Canada, and Germany were transferred to a Dutch company, International Hydrocarbon Synthetic Corporation (I. H. S.), which was under German control (50 per cent Ruhrchemie, 50 per cent I. H. P.), with I. G. participation in royalties.

Standard Oil, I. G., Shell, Kellogg, and Ruhrchemie A. G. (under the control of Germany's steel magnates) agreed that the last-named's coal-oil patents (Fischer-Tropsch process), for instance, should be assigned to a newly formed enterprise, Hydrocarbon Synthetic Corporation. This process is especially suitable for small-plant conversion of coal into oil. Hydrocarbon Synthetic Corporation was under common control of Standard Oil, I. G., Kellogg, and Shell, while Ruhrchemie A. G. was otherwise compensated. This happened in October, 1938, shortly after Munich, when the Nazi power seemed to be invincible. What price was paid to the German steel industrialists by Standard Oil, Shell, and Kellogg for the refusal of Ruhr-

chemie to sell licences for the coal-oil patents outside of Germany? This question has been left unanswered.

Something must be said here about the scope of the Hydro Patents Company. This company, founded by Standard Oil, had sold licences on hydrogenation patents to other American oil companies under the condition that they became stockholders in the Hydro Patents Company.

We quote from the "Information" of the Antitrust Division, Department of Justice, sent to the District Court of the United States for the District of New Jersey in the complaint against Standard Oil and other companies:

> " 'The Mutual Licensing Plan of the Hydro Patents Company for the Hydrogenation Process was calculated (*a*) to prevent the utilization of coal for the production of petroleum products, and thus exclude coal operators from the oil business; (*b*) to prevent any person from utilizing the hydrogenation process to the detriment of Standard or I. G. by upsetting the existing *status quo* in the oil business; (*c*) to prevent competition among oil refiners; (*d*) to secure for I. G. in Germany and for Standard in the rest of the world, including the United States, the benefit of all present and future methods and discoveries in the practice of hydrogenation, then the only feasible method for the production of synthetic gasoline and other oil products, thereby preventing other oil companies from manufacturing and selling cheaper or better synthetic oil products in competition with I. G. in Germany and Standard in the rest of the world, including the United States; and (*e*) to prevent oil companies from utilizing the hydrogenation process for the manufacture of chemical products."

A special arrangement was to guarantee that Standard Oil and I. G. would always control further technical developments in the new industrial field. All licensees of Hydro Patents were obligated to employ a subsidiary, the Hydro Engineering & Chemical Company, "to prepare and supervise the necessary plant design and engineering". A fee of 4 per cent of the total capital expenditure for the hydrogenation plant and equipment was to be paid for these services. The arrangement enabled I. G. and Standard Oil to acquire the technical experience of all other companies. For as pointed out by "Information" of the Antitrust Division:

"Licensees were also required to furnish engineering reports upon operation and performance in all of their hydrogenation plants. Engineering was given the right to inspect all of the plants and processes of licensees in the practice of hydrogenation, and was thus given a complete intelligence service upon all hydrogenation in the United States; furthermore, Engineering was obligated to transfer all of this information to S. I. G., and S. I. G. was in turn obligated to transfer all of this information to I. G."

In later years synthetic developments had reached a point where new synthetic processes which did not utilize hydrogenation had become practical. Thereupon Standard Oil insisted on extending the claim for royalties to "intermediate zone processes" which had little or nothing to do with the hydrogenation patents. This was resented by the licensees.

At the stockholders' meeting of Hydro Patents on February 17, 1939, various licensees of Hydro Patents resented Standard Oil's claim for royalties on synthetic processes which did not use hydrogenation. Mr. Howard, who functioned as chairman, put forward the argument that I. G. might withhold patents and processes unless royalties were paid for them. He did not reveal that these patents were already at the disposal of Standard Oil.

When the Second World War began, large-scale hydrogenation plants were transforming coal into oil in only two countries: Germany and Japan. In most other countries the hydrogenation patents were utilized only to curb the new production methods from being put into practice. There is no American plant where coal is transformed into oil—there is not even a pilot plant for experimental purposes.

It may be said that America has an abundance of crude oil and therefore does not need a substitute. Such an answer is not satisfactory, even if we acknowledge that there is no immediate danger of an exhaustion of oil deposits. The transportation problem, for instance, could have been eased if the new methods of production had been applied. Another point is still more important.

The Nazi air force could thus gain from the technical experiences and secrets of industrial research in other countries, and was in part financed by the victims it was bombing. This was all a part of the secret oil international which divided, redivided, and redistributed world markets, patents, and technical ex-

periences in peace-time, with special provisions to tide over "suspension" in war-time.

Paraflow

The German chemical trust also concluded other working agreements with Standard Oil which were intended to survive the World War and to guarantee the *status quo* or at least a continuation of the partnership after the war. The case of *Paraflow* is typical.

Paraflow is a synthetic-oil product (originating from the chlorination of paraffin wax) that is of great military importance; for it lowers the freezing point of lubricating oil—highly important if tanks and planes are to be kept running in sub-zero weather. Standard Oil developed the process for manufacture of Paraflow from an I. G. product. Though Standard Oil held the decisive patent rights, a new pact was concluded with I. G. on the division of the world markets. After the conquest of Norway, I. G. obtained a greater supply of whale oil from which a new competitive product called "PVO" could be produced.

What was the reaction of Standard Oil to this "unfriendly" act of I. G.? H. W. Fisher, manager of the Standard Oil Development Company, warned I. G. not to disturb the monopoly agreement by establishing a "price or potency competition which would greatly reduce the large profits from this [paraflow] enterprise". Then, on November 15, 1940, a new division of the world market was offered to I. G., for the Standard Oil Development Company suggested the following "Paraflow Agreement":

> ". . . Whether or not it is advisable at the present time to attempt to arrive at a permanent arrangement to replace the present Paraflow Agreement, a temporary arrangement, recognizing war conditions, is considered advisable by both parties, and the following suggestions are made by Development to I. G.:
>
> > "1. I. G. be permitted to sell Paraflow (but not PVO) in the countries specified below in which it is, at present, impossible for Development or its sales agents to effect deliveries from the United States:
> >
> > "Albania, Belgium, Bulgaria, Czechoslovakia, Denmark, Danzig Free City, France (including Algeria

and Tunis), Greece, Holland, Hungary, Italy, Jugoslavia, Liechtenstein, Norway, Poland, Roumania, San Marino, Switzerland and Turkey.

"The principle being followed here is that since Development is unable to supply its customers directly, it is arranging to supply them temporarily from another available source. If Paraflow is supplied the *status quo ante bellum* is disturbed as little as possible which is very desirable in an interim arrangement. The sale of PVO in these territories would materially alter such a *status quo*."

The high price for Paraflow may easily have encouraged competitive production. Other similar and even better processes might have been invented. This had to be prevented. Therefore one of the leading officials of Standard Oil (Dr. E. Lieber) advised another employee of his company:

"It seems to me that our best hope in protecting our patent structure under the existing circumstances is intensive research work to uncover all the possible pour depressants and to literally 'flood' the patent office with our applications. There is, however, great danger in filing too few applications."

The price for Paraflow was kept so high by Standard Oil that about 50 per cent of the net sales in 1939 and 1940 turned out to be net profit, even though the price had been reduced from $3 in 1931 to $1.90 in July, 1937, the last price reduction for the new product.

Another incident is especially revealing because it shows to what extent Standard Oil felt itself dependent on the "good will" of I. G.

Despite the numerous protective patents, Standard Oil could not prevent Socony-Vacuum from bringing out an apparently better and cheaper product, called Santopour. Mr. Fisher of Standard Oil therefore offered to Socony-Vacuum an agreement according to which Santopour was to be withdrawn from the market while Socony-Vacuum was to get a share in the Paraflow profits.

"Our [Standard Oil's] conclusion is, therefore, that the best policy is to retire Santopour as quickly and as quietly as possible, and to market only Paraflow of present potency." Socony-

Vacuum suggested that they utilize its own process and withdraw Paraflow from the market. This offer was declined by Standard Oil because then, under the Socony-Vacuum patents, I. G. would not receive a royalty, and Standard Oil was afraid that this would be an "unfriendly act".

Paraflow was an oil product which was to fall under the control of Standard Oil according to the original contracts with I. G. Yet Standard Oil did not feel free to act independently even while marketing this oil product in America.

Synthetic Oil for Japan

The patent monopolies and international agreements which curbed production in America were not effective in totalitarian states. The latter were able to obtain licences and technical co-operation which was refused to competitors in America.

How do the Japanese, for instance, obtain their aviation gasoline? Did they obtain licences or knowledge of the technical details for synthetic production? W. S. Farish, of Standard Oil, denied this, and told the Truman Committee:

"The Japanese never obtained a licence for 100-octane gasoline by the hydrogenation process. Before the outbreak of war in 1939, the I. G. negotiated with them a licence agreement involving $2,000,000 in royalties. This involved our consent, which we withheld after placing the proposal before the State Department."

The following letter, however, speaks for itself:

"Thames House
Millbank, London, S.W. 1.

"1st June, 1939.

"International Hydrogenation Patents Agreements—Royalty Payments to Standard-I. G.-Japan Gasoline K.K.

"Mr. Ross H. Dickson,
26 Broadway,
New York.

"Dear Mr. Dickson,

". . . A licence was granted to Japan Gasoline K.K. by Universal Oil Products Company and by International

Hydrogenation Patents Company. The licence covered both hydrogenation and polymerization, and U. O. P. and I. H. P. agreed that they would split the total royalties received fifty/fifty. Japan Gasoline K.K. made a payment on account of the licence granted by both parties of $300,000 for which they had the right to manufacture 300 barrels per day of iso-octane. They have an option, however, which incidentally expires on July 1st, 1939, on payment of a total of $600,000, *i.e.*, $300,000 over and above the $300,000 which has already been paid, to receive an excl. licence under the rights of both of these parties for Japan.

". . . I know that Mr. Howard is familiar with the discussions which took place between Mr. Nieuwehnhuis and Dr. Ringer.

"Sincerely yours,
"W. A. CARLISLE."

It is true that the above letter does not specifically mention 100-octane gasoline. But we must conclude either that Mr. Farish was quibbling or that the Japanese did get their 100-octane gasoline.

Japan's notorious lack of oil, and in particular of aviation gasoline, seemed a serious obstacle to any strategy involving mass air raids against far distant objectives. The mystery of such raids, however, can now be solved. Japan was able to utilize the synthetic processes of I. G., as well as of Standard Oil and other American companies, in preparing its air attacks against the United Nations.

The Survival of Liechtenstein

The story of the secret Oil International would not be complete without referring to Liechtenstein, Europe's mystery state.

Liechtenstein, with its capital, Vaduz, is the most remarkable country in war-time Europe. Situated in Central Europe, almost encircled by the Third Reich, it is the only place in the old world where people feel safe, with unprotected frontiers, with only a few policemen maintaining internal order—in short, an idyllic country. How did it escape Hitler's armies? With a population of only 12,000, it could never have tried to defend its national existence. But we must not forget that the administration of this tiny state offered hospitality to corporations which sought a

neutral centre for private empires, free from the struggle of national states and from taxation. This little country in war-torn Europe had been selected by I. G., by Standard Oil, and also by Shell as one of the centres for the super-national world empires. Its only apparent function is to enable private world empires or large corporations to escape from the risks of war and also from taxation.

The State of Liechtenstein, since it is "protected" by the Nazis, is sheltering an important international corporation which deserves our special interest, the International Hydrogenation Patents Co., Ltd. This company was founded by Standard-I. G. (now Standard Catalysts), *i.e.*, by Standard Oil and I. G. as partners. Later a third partner joined the company, British-controlled Shell.

The "neutrality" of Liechtenstein has been respected by Hitler. Consequently the International Hydrogenation Patents Company (I. H. P.) is still in existence. It had formed a subsidiary company in Holland, the International Hydrogenation Engineering and Chemical Company, "in order to give technical assistance" to other firms which may obtain a licence from I. H. P. This arrangement follows the usual pattern to form a special firm which becomes the sole owner of the "know-how" or of technical experiences vital for the use of complicated chemical processes. Such a device helps to extend the life of a monopoly beyond the time when patent rights expire.

I. H. P. was expected to play a great role; for it was intended to control the exploitation of I. G.'s synthetic-oil patents in the entire world, outside of Germany and of America. This long-term speculation did not materialize. For the only assets of I. H. P. were the I. G. hydrogenation patents. They were "sold" by Standard-I. G. to the new company in Liechtenstein for the sum of $11,500,299.10. At the same time Shell became the third partner in I. H. P. Thus the two biggest oil concerns in the world joined hands with I. G. in the control of the synthetic-oil patents. As producers of and traders in natural oil they were, of course, interested in curbing rather than promoting the new synthetic processes for production of gasoline from materials other than crude oil.

Shell, for instance, is the main supplier of oil for the British fleet and for the British home market. It is, therefore, not especially interested in the manufacture of synthetic oil from coal in England. But such a development would have been extremely

useful for Britain's economy. The British Isles lack deposits of crude oil. They have, however, an abundance of coal. Synthetic production of oil from coal would have been much more important for Great Britain than it was for Germany, and the greater financial resources of pre-war Britain would have made it relatively easy to finance a new synthetic coal-oil industry on an even greater scale than I. G. could do this in Germany. Such a development of new raw-material resources would have immensely increased the economic strength of England in wartime. The task of her commercial fleet would have been greatly eased if Britain had had domestic sources of oil. The control of the synthetic hydrogenation patents has stifled this new industrial development which would have strengthened the coal-mining companies and Imperial Chemical Industries, I. G.'s rival power in Europe.

The total state directed the foreign policies of German corporations and strictly supervised their activities. But they still could utilize their "individual initiative" in pursuance of private interests and in order to ally themselves with vested interests abroad. Thus I. G. Farben was permitted to utilize its synthetic-oil patents for a combination with Standard Oil. At the same time, the German steel industrialists, under the leadership of Krupp and Stahlverein, were enabled to promote a competitive process for synthetic-oil production, and to offer it to American competitors of Standard Oil. M. W. Kellogg Company, which had developed its own processes for synthetic-oil production, acquired the patents of Ruhrchemie A. G. Then Mr. Howard realized that he had deceived himself (or was deceived) when he believed that I. G. patents secured a basic control of synthetic-gasoline production. He wrote in a memorandum from Paris on February 11, 1936:

> "We must face the fact that the I. H. P. [International Hydrogenation Patents Company] has definitely lost its complete control over the production of synthetic oils. While it remains the most important factor in that it controls the only commercially demonstrated processes, and the only one producing a full line of liquid fuels, the combination of the Fischer process as a means of producing gasoline, and of the Pott and Uhde processes as a means of producing heavy oils, makes a very serious breach in the hitherto satisfactory control of the situation. We are therefore faced with the problem of what

programme we should adopt in the light of these changes in the situation."

This "admission" acknowledged the fact that the American development of synthetic-gasoline production did not depend on the ownership of I. G. patents, and that Standard Oil had acquired them under an erroneous assumption. They did not secure "satisfactory" control of the new industry. Whatever Standard Oil had paid to I. G. for the apparent monopoly rights was more or less based on a false speculation. Mr. Howard himself raised the question: What can we do next? The core of the problem was how to secure effective control of the entire field, Mr. Howard reported to the Executive Committee of Standard Oil on October 28, 1938:

"The high points of the matter are that Jersey and Shell acquire sufficient effective control of the hydrocarbon synthesis process in the world outside of the United States so that their position as leaders in the entire field of synthetic petroleum production is assured."

I. G. and Standard Oil realized that they alone, relying merely on their patent rights, were unable to stem the drive for synthetic production of gasoline and of other new synthetics. On June 10, 1938, Frank A. Howard of Standard Oil wrote to Dr. Butefisch of I. G.:

"We feel very strongly that it is to the advantage of our group to organize the first general plan of handling this catalytic development and licensing situation. If we can work the matter out along the lines indicated in these memoranda, we may find it to our advantage to offer the same general scheme, with any necessary adjustments of the figures, to some other strong and aggressive oil companies who may be expected to contribute something worthwhile to the catalytic cracking development within the very near future."

Standard Oil and I. G. could not prevent other companies from working independently on the development of synthetic production. Their aim was to combine the research facilities, experience, patent rights, and corporate powers of other corporations in an international cartel.

Such a strategic plan could only succeed if the governments in their own and foreign countries were "co-operative". The full aid of the Nazi government was secured by the fact that I. G. was a leading partner and that Standard Oil conceded to it the completely unrestricted independent development of synthetic production within the Third Reich. I. G. could take advantage of the combined experience and technical secrets of the foreign associates.

When British chemists of Imperial Chemical Industries (I. C. I.) discovered another process for synthetic oil similar to the process controlled by Standard Oil and I. G., the development of a British synthetic oil industry independent of the big oil Powers and of I. G. became possible. I. C. I. had obtained a number of patents which were competitive with I. G.'s Bergin process. Therefore Standard Oil and I. G. made a special deal with I. C. I., with the result that the latter surrendered all patents and operating rights outside the British Empire to I. H. P. In return, Imperial Chemical was allowed to utilize the I. H. P. patents with the specific obligation that I. C. I. would not erect a a plant capacity in excess of 25 per cent of the total peacetime consumption of oil within the British Empire.

This agreement was signed in April, 1931. During later years, oil interests "convinced" the British government that it was "inadvisable to erect hydrogenation facilities in England for the production of synthetic fuel". The outbreak of the present war found England almost completely unprepared for synthetic production of oil.

Thus we see that whenever new processes for synthetic oil were discovered, Standard Oil and I. G. tried to bring the corresponding patents under their control and prevent the construction of competitive plants. All synthetic processes for oil were finally pooled, so that the new industry, even before it had come into existence, was already under complete control of one single group, with Standard Oil, I. G., and Shell as the dominant forces.

Documents and files which deal with these and other "agreements" between private empires and representatives of the Nazi state have been deposited in the vaults of lawyers and banks in Liechtenstein, the neutrality of which, we recall, is respected even by Adolf Hitler.

Who has ever heard of the methane steam process? Only a few experts know about it, though it has much to do with the Third Reich's military prowess and America's delay in armaments manufacture during the first stage of the war.

First, a few facts about the methane steam process.

It is of great strategic importance for the Third Reich, for it can be used for an interesting variety of purposes: The methane steam process makes it possible to convert synthetic ammonia into explosives or fertilizer; or to combine hydrogen and petroleum to make gasoline or aviation gas; finally, to manufacture hydrogenated food fats.

The real history of the methane steam process begins in 1937, almost five years after Hitler's rise to power, and shortly after the inauguration of Hitler's Four-Year Plan for the rearmament of the Third Reich. At that time Standard Oil and I. G. both held a number of patents which were needed for the new synthetic production. An agreement was concluded which left the exclusive right for manufacture of synthetic ammonia, nitrogen derivatives, explosives, etc., to I. G., except synthetic production of gasoline, which was in the "sphere of interest" of Standard Oil. The agreement granted the usual one-sided privileges to the German trust. I. G. had the exclusive right to use the process also for synthetic production of gasoline in Germany. Standard Oil, on the other hand, did not own the right for hydrogenation in the United States—except in the limited field of oil or gas.

Thus I. G. was in a position to curb America's manufacture of explosives up to Pearl Harbour. I. G. as a commercial enterprise might have been interested in granting licences and in receiving royalty payments from American manufacture of explosives or other related synthetic products. In this case, however, the military interests of the Nazi strategists prevailed. American production of ammunition had to be delayed. Therefore repeated requests of American companies for a licence to use the process were declined.

The Hercules Powder Company wanted to construct an ammonia plant for synthetic production of explosives or fertilizer, and therefore asked I. G. for a licence as early as 1933, the year when Hitler came to power in Germany. The answer was "no"—

". . . Because of our other nitrogen interests we were not in a position to permit your firm to use our process and experience for the production of hydrogen and ammonia synthesis."

Three years later, in April, 1936, a similar request received a negative answer:

". . . We have again reached the conclusion that, because of our other interests in the nitrogen field, we are not in a position to put at your disposal the experience you desire."

Then, on December 9, 1939, when Europe already was at war, the American agency of I. G., Chemnyco, reported to the mother company in Germany that the Atlas Powder Company had a project for the construction of a plant where the synthetic process would be used.

"The Project of Atlas Powder will be carried out irrespective of whether Chemnyco asks permission of the I. G. executives in Berlin.

"We do not know whether under these circumstances you would still refuse to promote in any way the building of basic nitrogen plants in the United States."

Then I. G. took a final delaying action. Negotiations were resumed with the Atlas Powder Company on the granting of a licence, only to be broken off abruptly in the middle of 1940. The American agent of I. G. wrote from his New York office to the Atlas Powder Company on June 11, 1940:

". . . I. G., for the time being, are not in a position to grant a licence. To their regret they are also not able to indicate at what future time negotiations on this matter might possibly be resumed."

I. G. made special efforts to obtain guarantees that the synthetic production of explosives, etc., would not be utilized for military purposes—for instance, for the manufacture of armaments.

Was Standard Oil aware of this situation? W. E. Currie, executive of Standard Oil Development Company, under whose name numerous former I. G. patents had been registered after

the start of the war, reported to the Standard Oil executives on a meeting he had with a leading man of I. G., Dr. Hochschwender:

> "On April 11th Dr. Hochschwender told me that he felt sure I. G. would not agree to permit the granting of licences under its hydrogen manufacturing patents, except with respect to particular installations about which it had been advised and of which it approved. Accordingly, he said he thought it better not to pass on to I. G. the suggestion in our letter of March 28, 1941."

This was apparently a mystifying situation. The I. G. patents, especially those in the field of synthetic production of oil and nitrates, had been transferred to Standard Oil immediately after the start of the war. Many former I. G. patents, however, did not become the formal property of Standard Oil. They were registered in the name of Mr. Currie, the same Standard Oil executive who was kept informed by I. G. on its refusal of licences for manufacture of explosives and other synthetic products to American companies. Did Mr. Currie let I. G. exert control over the use of patents which were registered under his name? It should be noted that only after Pearl Harbour did Mr. Currie and Standard Oil publicly claim the patents as their genuine properties.

CHAPTER XIII

WHY A RUBBER SHORTAGE?

AMERICA WAS not prepared to start mass production of synthetic rubber when the Japanese attack cut this country off from crude-rubber supplies. The decisive reason for this unpreparedness was the control of basic patents by I. G. Farben and Standard Oil.

As late as Pearl Harbour it was not even known which synthetic processes were practical and best suited for mass production. There was no time for further research or experimental production in pilot plants. This obviously should have been done by the owners of the patents before the war started. On the contrary, they discouraged other enterprises from entering the field of low-cost synthetic rubber. As a result the United States govern-

ment is now spending approximately $650,000,000 to finance hastily constructed new works without sufficient preparatory work. It must be expected that the work will not progress as speedily and as economically as would have been possible if the synthetic-rubber patent monopoly had never been effective. Expenditures thus wasted will run into many millions of dollars, without counting the incalculable losses arising from the delay in supplies of rubber.

Before the partnership with Standard Oil, I. G. Farben already owned patents for the production of synthetic rubber. The patent applications had been made when the Farben trust itself did not yet know *how* to produce the new material. They had, however, as thoroughly as possible barred all approaches to the synthesis of rubber, in order to discourage the rise of an American synthetic rubber industry.

For many years before the war broke out, I. G. Farben had watched closely the progress of foreign enterprises which took an interest in synthetic rubber, always carefully examining new possibilities for taking out patents to discourage competition in a field which they considered their own domain.

A net of foreign subsidiaries and associates or business friends informed I. G. of foreign developments which were essential for I. G. patent strategy. E. M. Clark, vice-president of Standard Oil of New Jersey, for instance, warned Dr. Carl Krauch of I. G. Farben on April 30, 1930, to examine the "patent situation", because Du Pont was doing research on the new process.

"My dear Dr. Krauch:

"I have just learned in an off-hand way that the Du Pont interests are doing considerable research work on producing artificial rubber from Butadiene. I am giving you this information, which I believe to be accurate, with the thought that you will wish to carefully review your patent and applications for patents situation."

This letter revealed how systematically I. G. followed synthetic-rubber developments outside Germany in order to hinder them through application for more and more patents.

Mr. Farish of Standard Oil has asserted that synthetic rubber was a German discovery and that Standard Oil did some kind of patriotic deed when it made available the results of I. G. Farben's technical genius to American industry.

"Standard has no apologies to make for the part it has played and is now playing in the development of synthetic rubber. It brought to this country from Germany the I. G. Buna rubber invention now being used in the Government rubber programme. Should this programme be supplemented by Butyl rubber, it will be because Standard, through its experience gained in working with Vistanex, another I. G. invention, succeeded in developing the Butyl formula."

We shall see how closely the facts bear out this assertion. Let us first examine the supplementary claim that Standard Oil did the "pioneer work" in the field of synthetic rubber because there was no other American group to take the risk in the new technological venture.

Mr. Howard, who carried on most of Standard's negotiations with I. G., has himself given documentary proof of the falseness of this allegation. In October, 1935, Dr. Fritz ter Meer, an executive of I. G. Farben, came to America and "called on Mr. Howard to discuss the synthetic-rubber process which has been his charge". He reported that "the product is of very superior quality, especially for tyre treads, showing an abrasion of wear resistance 50 to 100 per cent better than that of the best natural rubber". But there were several handicaps, especially "from a cost standpoint", about which Dr. ter Meer "was reluctant to give any definite figure".

At this stage, Standard Oil was approached by R. T. Vanderbilt, who offered to finance an American synthetic-rubber industry. Mr. Howard wróte about the fate of this offer in a letter addressed to Mr. Teagle, but also submitted to Mr. Farish:

"As regards direct efforts to do something with the I. G.'s synthetic rubber in the United States, I recently had a call from Mr. R. T. Vanderbilt. He has picked up enough gossip on this synthetic rubber project from various sources to have a pretty good idea of its status. He is very much interested in the rubber business and urged me to permit him to take over this synthetic rubber development in the United States on almost any basis. He is very anxious to spend his money trying to do something with it here and is confident that he has the chemical ability in his organization to contribute things which the Germans could not contribute. I mentioned this to Dr. ter Meer, and we agreed that it is not desirable to bring any outside organization directly into this development on a full

scale because this would entail giving them the benefit of a large amount of technical information which even more than the patent situation constitutes the proprietary value of the synthetic rubber project."

At this point we must refer to Jasco, Inc. We might designate this firm as I. G.'s and Standard Oil's mystery company, the existence of which was not to be publicized. Thus, Standard Oil handed over a "strictly confidential" survey of its "interlocking interest in Germany in the production of synthetic products important in time of war" to its own government through the Embassy of the United States in Berlin. This was done on November 4, 1938. The chart and the text of the "confidential information" of Standard Oil did not mention the name "Jasco, Inc." nor the important function Jasco was to play in the development of synthetic rubber.

The secrecy about Jasco has a very interesting background. For this company was to become the centre of the I. G.-controlled synthetic-rubber monopoly in America, with Standard Oil as a partner obliged to follow the wishes of I. G.

Jasco, Inc., was one of the greatest successes of I. G. Farben in America. It illuminates well the role of Standard Oil's relationship with the German chemical trust. It was a jointly owned share-expense company (50 per cent by each partner) founded at the end of September, 1930, for the specific purpose of "the investigation, testing, development and licensing of new chemical processes brought to it by the parties", especially of synthetic materials made from "crude petroleum, natural bitumen or natural gas or produce therefrom".

But I. G. had formulated the clauses of the Jasco firm in such a way that it remained in sole control of important results of experiments and research financed largely by Standard Oil. In practice, I. G. could send her experts to the laboratories and pilot works of Jasco. They were paid by Jasco, but remained in the service of I. G. Farben. They conducted their research and experiments with the materials and money of Jasco. This was done quite in accordance with the clauses of the agreement signed by Standard Oil. For the text of this agreement expressly stated:

"Technical employees, executives and specialists in the employ of the parties will be assigned to perform services connected with the work of the *Joint Company* while remaining

employees of the parties respectively, and the JOINT COMPANY will reimburse the party in question for the reasonable cost to it of the services so rendered. Technical employees of the parties performing services for the JOINT COMPANY will in all cases be bound by contract to assign their inventions to their respective employers to the end that such inventions may be brought within this agreement, to the extent to which they come within its terms, by the employer."

I. G.'s synthetic-rubber strategy in America was clear: The patents it controlled were to be used in order to delay the development of an independent synthetic-rubber industry in America until the Third Reich had gained a major victory in Europe and was acknowledged as the new master of the world. Then the patents could be used in order to make America's synthetic-rubber industry a sub-branch of the new German world monopoly No. 1: synthetic rubber.

Standard Oil apparently hoped to become the junior partner in the new world monopoly, for it was willing to guarantee to I. G. "a 25 per cent overriding royalty first paid to I. G. before the pro rata sharing of returns. Also I. G. has the deciding voice on policy questions with reference to their own inventions." [1]

Standard Oil, we may assume, did not realize the full consequences for this country of giving a Nazi concern a "deciding voice" on a matter of such great military importance. Otherwise the Jersey corporation might have opposed the monopoly claims of the German trust. It might have aroused public opinion or have asked the U.S. government to enact measures against the threat of a Nazi synthetic-rubber monopoly.

Standard Oil, on the other hand, was apparently afraid of arousing public interest in the mysteries of synthetic rubber. For then the rubber companies and automobile manufacturers and other competitive interests could have insisted on measures which would have made it impossible for any single corporation to control the new industry. The "substantial minority" share which Standard Oil was granted from I. G. Farben might have become valueless. Standard Oil preferred to keep silent.

Such an attitude was also in accordance with expectations of a major Nazi victory. Thus we can understand acts which appear today as major miscalculations. This refers in particular to the

[1] "Extract from Executive Committee Memorandum" of Standard Oil of New Jersey of April 4, 1938.

insistent efforts of Standard Oil, first, to maintain the "good will" of I. G. Farben by one-sided services for the German trust; second, to attempt to prevent the rise of independent or competitive synthetic-rubber production; and third, to believe that I. G. would finally fulfil its obligation to hand over the secrets of synthetic rubber and a full report on the experiences of German I. G. plants. The following letter of Mr. Howard, written to one of the leading executives of I. G., speaks for itself:

"April 20, 1938.

"Frankfurt a. M.
Grüneburgplatz,
Germany.

"Dear Dr. ter Meer:

"I acknowledge with thanks your letter of April 9th. Dr. Hochschwender and myself will do our very best to keep the situation here under control so that we will have an opportunity of making the most favourable arrangement and of securing for your process the recognition which we all desire for it.

"I wish you early success in your negotiations, and hope especially that, without waiting for final conclusions on all of the questions involved, you may be able to grant us the authority to proceed in a preliminary way with the rather lengthy discussions here which must be had with the various interested rubber companies preparatory to organizing them into a co-operative group.

". . . My view is that we cannot safely delay the definite steps looking towards the organization of our business in the U.S. with the co-operation of the people here who would be the strongest allies, beyond next fall—and even to obtain this much delay may not be too easy.

"With best regards, I remain
"Very truly yours,
"FRANK A. HOWARD."

Later, when testifying under oath before the Truman Committee, Mr. Howard made it clear that through the Jasco Company, Standard Oil had to follow the instructions of I. G. concerning production of synthetic rubber in the United States.

"The patents were assigned to an American corporation, Jasco, subject to the control of the originator of the patents as to the exploitation of those patents in the United States, and subject to a 25 per cent overriding royalty to him. That meant that while the patents were owned by an American corporation in which we were an equal shareholder with the Germans, the control of what to do about those patents was in the hands of the Germans, who had a five-eighths net interest, we having only a three-eighths net interest in the patents. We therefore could not do anything in the way of either licensing or using the patents ourselves or creating any industry here under them without the consent of the German I. G. That was the trade."

Buna

Mr. Howard asserted before the Truman Committee that Standard's Development Company, together with I. G., had spent plenty of money on experiments for the development of the new synthetic processes.

"Our . . . function was to try to develop under our own direction but partly with their money in the United States a process of making the necessary raw material, butadiene, from oil, cheaply enough to give the product some hope of commercial success here. From 1931 on, we were engaged in that task, spending our money on it, and their money also, in the United States, and in the meantime they were carrying the burden of experimental development and research on the actual polymerization of the rubber in Germany."

This testimony referred to the research and experimental work of Standard. The final experiments, however, were done in Germany. The strange arrangement was explained by Mr. Howard as some kind of sacrifice by I. G. Standard Oil "unfortunately" was unable to obtain the results of the "burden of the experimental development and research on the actual polymerization in Germany" from I. G., when these results were needed in America at the outset of this war.

Several years had passed. Standard was still experimenting while I. G. was building plants in Germany for mass production of synthetic rubber. Nobody in America knew how far these plants were a success, what synthetic rubber cost to produce, and which processes were particularly suitable to mass production.

When the Farben chemists left Standard's laboratories and returned to the Reich they took with them valuable results of the research done at American "pilot works". Standard Oil was left with the text of the patents which were registered in Washington. They were readily available to anyone who wanted to see them. But Standard Oil executives did not possess the "know-how" or the missing links of the process vital for actual production. Though to be valid a patent must describe each necessary step in order to accomplish the result claimed, these details can be—and often are—given in such general terms that the patent is useless except to the person possessing this all-important "know-how".

It must be emphasized that I. G.'s act in withholding the "know-how" was in violation of the spirit and in violation of the text of the agreement between Standard Oil and I. G. The Farben trust openly declared that the secrets of German chemical production could not be revealed, nor their experiences with synthetic-rubber production, though they had been to a great extent the result of experiments in America for which Standard Oil had paid its share.

Mr. Howard showed full understanding of the obligations which the German chemical trust had toward the Nazi government in Berlin, acknowledging the fact that these obligations had to be fulfilled though they were in conflict with the contractual obligations between the two companies.

Even in 1935 I. G. Farben had informed Standard Oil that "the Hitler government does not look with favour upon turning the invention [Buna synthetic rubber] over to foreign countries because of military expediency".

Only in 1938, three years later, did Mr. Howard complain of the delay or reluctance of I. G. in turning over the synthetic-rubber processes—the "know-how"—to the jointly owned enterprise in America. He had relied on the patent monopolies of I. G. But the longer production was delayed, the more the value of these patents decreased. For several American companies had made great progress in independent manufacture of synthetic rubber. Thus Mr. Howard, in a report to the Executive Committee of Standard Oil, "deplored the fact that the German government's restrictions on I. G.'s freedom of action have prevented our making material progress in the American field, particularly as there is some indication that the American rubber companies are making independent progress". Therefore Standard Oil, in 1938, became more "insistent".

"At our insistence," stated Mr. Farish, early in December, 1938, "Dr. ter Meer, head of I.G.'s synthetic-rubber development, came to the United States and arranged with five leading rubber companies for an experimental programme for manufacturing tyres with synthetic rubber". Dr. ter Meer returned to Germany, leaving behind promises for an early start of synthetic-rubber production which at that time was already in full swing in the Reich.

In a cable of October 16, 1939, after the outbreak of the war, Mr. Howard again asked I. G. for the technical secrets of Buna production. The only result of this demand was the answer of I. G., sent by cable:

> "Referring to your question with respect to technical information about Buna, we have to inform you that under present conditions we will not be able to give such information".

Hence, at the outset of this war Mr. Howard was in a very embarrassing situation indeed. For many years Standard Oil or Jasco had left it to I. G. Farben to develop synthetic-rubber processes. After the outbreak of war Mr. Howard had negotiated the transfer of the rubber patents to the sole ownership of Jasco. Thus the danger for both Standard Oil and I. G., that during the war the patents would be declared "enemy property", was averted. They were now owned by a hundred-per-cent American company, which Jasco had become. But Standard Oil did not yet know how to produce synthetic rubber efficiently.

Mr. Farish confirmed the fact that I. G. did not comply with its obligations.

> "I. G. fell more and more under the control of the German government—or perhaps as the German government itself drew nearer to the war—there was an apparent reluctance to respond to further requests for information on these [synthetic rubber] subjects."

Standard Oil finally started its own independent research, and was quite surprised to find out "that we [Standard Oil] had even more knowledge than we realized, and that our technical staff had the ability to fill in the gaps in the information more readily than we realized". In other words, the research staff of Standard Oil in America had never been wholly dependent on the secrets and experiments of I. G.

I. G. obviously wanted a delay in America's synthetic-rubber

production until the war had been won by the Third Reich. Then there would be time enough for the construction of subsidiary production of synthetic rubber in America under joint control of I. G.-Standard Oil. The New Jersey corporation, on the other hand, realized the danger of the growth of competitive synthetic production in the United States. In war-time patent rights cannot effectively be used to prevent or unduly delay the construction of a new industry.

Great efforts were made by Standard Oil to gain control of the new synthetic industry on the basis of an agreement with the leading rubber companies. These were the most important consumers of synthetic rubber. If they went into production themselves they had distinctive advantages as producer-consumers. There were enough independent oil producers from whom raw material for synthetic rubber production could be purchased. Furthermore, other raw materials are suitable for mass production of synthetic rubber, too—for instance, grain. It is plain that Standard Oil would have lost another market for its oil unless the new synthetic-rubber industry could be brought under control of the oil industry.

It was, however, Du Pont which developed the first commercially successful synthetic rubber. Costs of production for it (Neoprene), however, are relatively high, and the new material was of interest only to consumers who needed Neoprene because of qualities missing in natural rubber. B. F. Goodrich, a prominent company in the rubber industry, also developed an independent process.

During the autumn of 1941, when the possibility of an acute rubber shortage was already visualized, Standard Oil plants apparently could not yet start mass production of synthetic rubber. Rubber and chemical companies, on the other hand, were willing to invest in the new industry, and applied for a licence from Jasco. These were offered the release of the processes by Jasco, as if this company knew how to make synthetic rubber on a mass-production basis. These negotiations were a "delaying action", intended to bring the rubber industry under permanent control of Standard Oil.

The "general plan" of Standard Oil was the formation of an enterprise financed by the rubber companies but controlled by Standard Oil.

Mr. Howard, in an inter-office memorandum of Standard Oil, revealed the reason that is "holding us up":

"The thing that is really holding us up, however, is not the lack of a plan either from Goodyear or ourselves, but the inability of our German partners to obtain permission of their government to proceed with the development in the United States".

Then Goodrich appeared on the scene with its own synthetic rubber. Standard Oil claimed that its patent rights had been infringed and began suit.

Thus two years after the start of the Second World War, Standard Oil was still trying to utilize I. G. patents in order to prevent Goodrich from manufacturing synthetic rubber. Goodrich claimed that it had developed different processes in its own laboratories. But Mr. Howard cabled to I. G. in Berlin in October, 1941, asking the Nazi trust for assistance against Goodrich. The text of the cable is an interesting revelation of the intimacy of the relations between Standard Oil and I. G. and the apparent willingness of both to co-operate for the protection of each other's interests.

"Cable Oct. 22, 1941, from Howard to I. G. Farbenindustrie, Ludwigshafen on Rhine, Germany.

"PC Seventeen Jasco has filed suit against the B F Goodrich Company and Hycar Chemical Company, its affiliate for infringement of the following US Patents 1864 naught 781911672193573319 38 . . . stop In connection with this suit please send us copies of the German patent applications exactly as they were filed in the German patent office on which those US patents were based stop The copies should be certified by a US Consul stop Assume you have the original US patent grants not necessary to forward these to us stop Goodrich has proceeded with unlicensed commercial production of Buna type synthetic rubber claiming product is its own independent development stop It is important for us to know with dates which Goodrich representatives visited your plants what they saw and what information you gave them.

DRAWOHAF."

Thus a peculiar situation arose. America was openly backing the Allied Powers. Pearl Harbour was only two months off. Synthetic rubber had become one of the most important war materials. Yet Standard Oil attempted to force Goodrich to stop manufacture of artificial rubber. Even after Pearl Harbour, the

legal action against the expansion of synthetic-rubber production outside the realms of Standard Oil still was pending, until the Department of Justice interfered. Finally, in a consent decree, Standard Oil temporarily agreed to renounce its monopoly claim during the war and for six months thereafter.

The Future of Butyl

The future of synthetic rubber will be greatly influenced by the discovery of Butyl at the laboratories of Jasco. Standard Oil has claimed that Butyl will solve the problem of how to produce a standardized, cheap synthetic rubber in great quantities.

According to a Standard Oil statement, "Butyl rubber was the outgrowth of research conducted, first co-operatively and then separately, by the German I. G. Company and Standard in an effort to find a way to vulcanize a rubber-like product called Vistanex, which had originated with the I. G. Company. Standard discovered that by adding a minute percentage of another ingredient and changing the process there could be produced a true rubber capable of being vulcanized."

When the process was discovered somewhat before the present war, some Standard executives were doubtful whether they should forward their own synthetic-rubber secrets to I. G. while they were not informed on the experiences of the German synthetic-rubber industry. Mr. Howard, who was at that time again visiting Europe, wrote after his return from a meeting with "the I. G. gentlemen in Berlin" to Standard Oil headquarters in New York that full information on Butyl and any other processes should be sent to Berlin without delay. Mr. Howard was apparently aware that this procedure might arouse opposition. He therefore urged his friends in Standard Oil to consider his letter —which we publish below—as "confidential".

"*Confidential*

"London, 15th March 1938.

"Mr. R. H. Russell,
N.Y.

"Dear Bob,

"At my meeting with the I. G. gentlemen in Berlin on the Buna question, it developed that very rapid strides were being made in all phases of the Buna development, and there is even a prospect that this development will very soon stand on its

own feet economically in competition with natural rubber under manufacturing conditions and costs in the U.S. . . .

"In view of the very genuine spirit of co-operation which Dr. ter Meer displayed, I am convinced that it is not only the right thing to do but the best thing from every standpoint to pass on to them full information on the copolymer at this time. I do not believe we have anything to lose by this which is comparable with the possible benefits to all of our interests.

"With best regards, I remain

"Yours very truly

"FRANK A. HOWARD."

While I. G. or the German government was "reluctant" to send technical information on synthetic rubber to Standard Oil, the latter was anxious not to lose the opportunity for the formation of a new private monopoly, and therefore continued to hand over full information on Butyl rubber to the Third Reich. "Standard Oil failed", however, according to a statement of Thurman Arnold before the Truman Committee, "to disclose full information as to Butyl rubber to a representative of our Navy's Bureau of Construction and Repair." Mr. Arnold quoted a letter taken from the files of Standard Oil:

"Some time ago we received a rather detailed report on the preliminary work carried out by the Navy's Mare Island Laboratories on the evaluation of the three synthetic rubbers submitted to them, *i.e.*, Buna-S, Perbunan, and Butyl rubber. Last week Mr. Werkenthin of the Navy's Bureau of Construction and Repair in Washington spent the day with us here at Bayway to discuss the Mare Island Laboratories results, and to get some first-hand information on the compounding and general handling of these synthetic rubbers.

"Mr. Werkenthin was particularly interested in ascertaining how far we had proceeded in the development of Butyl rubber. . . . Because of the possible application of Butyl rubber to some of the Navy's requirements, Mr. Werkenthin had been instructed also to look into the manufacturing process. You will recall that I took up this question with you before his arrival. As agreed upon, I took Mr. Werkenthin over to the 'K' plant when it appeared that I could not very well steer his interest away from the process. However, I am quite certain that he left with no picture of the operations other than that a

considerable amount of distillation and refrigeration is involved in the handling of the light hydrocarbons, and that refinery gas rather than straight butadiene is the raw material."

The attempt of the German government to prevent even experimentation in synthetic-rubber production in the United States for commercial use and to keep its own technical experiences a secret would have beeen alarming to the American public if these facts had been made known. Such a revelation would certainly have made it difficult for I. G. to continue the policy of broken promises. But Standard Oil followed a policy of silence. Even during the second year of the war Mr. Howard thought it important to avoid any criticism of the I. G. or of the Nazis, and to wait patiently for Berlin's "permission" to start production of synthetic rubber in America. Mr. Howard's letter of April 30, 1938, is remarkable for the manner in which he stresses the "loyalty" that Standard owed to I. G.:

"Until we have this permission [from Germany], however, there is absolutely nothing we can do, and we must be especially careful not to make any move whatever, even on a purely informal, personal, or friendly basis, without the consent of our friends. We know some of the difficulties they have, both from business complications and interrelation with the rubber and chemical trades in the United States, and from a national standpoint in Germany, but we do not know the whole situation, and since under the agreement they have full control over the exploitation of this process, the only thing we can do is to continue to press for authority to act, but in the meantime loyally preserve the restrictions they have put on us."

From the mere business point of view Standard Oil seems to have acted against its own interests. Why should it give away a valuable process to I. G. without a *quid pro quo*? Why did Standard Oil fail to use the new process at least as a bargaining object —for instance, in order to compel I. G. Farben to hand over the "know-how" of its German synthetic-rubber production?

Mr. Farish explained to the Truman Committee that the Butyl process was and is valueless for Germany; for the Reich has not sufficient crude oil from which Butyl can be manufactured, and therefore I. G. would be unable to make use of the new process.

"While the Butyl rubber was recognized by us from the beginning to have commercial possibilities, it had no value to

Germany's self-sufficiency programme because the main raw material for the manufacture is isobutylene, which comes from oil refining and which is not available in Germany in the large quantities necessary. The same thing is true of Italy."

But is the Butyl process really without practical significance for the Third Reich? Our answer cannot be the same as that of Mr. Farish if we assume that Butyl really is important as a cheap substitute for natural rubber. For the German shortage of crude oil does not exclude the possibility that the strategists of the Third Reich may use some of their surplus crude oil in Rumania for production of Butyl rubber. The German shortage of oil is to a great extent a transportation problem. Only 50 to 60 per cent of the Rumanian output of crude oil can be transported to Central or Western Europe under present conditions. Thus a great deal of Rumania's oil production would be superfluous unless it is possible to relieve the strain on the transportation system, for instance by consuming more oil in Rumania itself and by improving the transport facilities. Both can be done if the Nazis construct Butyl rubber plants in Rumania itself. Then the surplus oil which would otherwise be useless for the Reich's war economy could become the raw material for the manufacture of synthetic rubber. Such a Rumanian rubber industry would be of immense value, especially for the Eastern and Southern Armies of the Third Reich and for the efficiency of German planes. It seems certain that the skilful experts of the "New Order" will not miss the opportunity to produce Butyl in Rumania, especially because such a plan can be realized relatively quickly. Therefore Standard Oil's explanation of the one-sided transfer of war-time production secrets to I. G. has no real foundation, and a better explanation must be sought.

Standard Oil's voluntary surrender of the Butyl secrets to I. G. becomes understandable only if there was a desire to secure the good will of the German chemical trust in the expectation that after the war collaboration would continue.

It is not yet certain whether Butyl is the solution of the problem of cheap synthetic rubber. Experience in mass production of Butyl is still lacking. Yet it probably is an important step forward in the new industry.

The method of production of Buna-N and of other speciality rubbers is, under present conditions, relatively complicated and

expensive. A manufacturer of such a synthetic rubber made the following calculation (in a statement to the author):

"Natural rubber costs about 20 cents a pound. Of course, we do not know how far costs of production will be reduced if we really go into mass production and make 50,000 or 100,000 tons of synthetic rubber instead of a mere 2,000 or 5,000 tons.

"An Airplane Company, for instance, voluntarily returned $17,000,000 to the Navy because they found out that they had manufactured the planes at a third of the costs of production they had calculated. They had based their calculation on their experience in small-scale output. They had no experience in mass production. Before the war they did not dare to go into this venture. They only did it when they got mass orders from the Navy. Thereafter they themselves were surprised at the extent to which costs declined when they worked on a ten times larger scale than before."

Butyl, in particular, can be produced in great quantities at relatively low costs and without complicated processes, as Mr. Howard himself stated:

"At the present time the raw-material cost for Buna rubber is supposed to be perhaps 15 or 16 cents a pound, maybe a little higher than that. The raw material cost for the Butyl rubber probably is not more than 3 cents a pound. The manufacturing cost of the two is, roughly, the same. The difference is, however, that the Buna rubber has been developed to the point where Buna is really a satisfactory substitute for natural rubber for heavy duty; that is, for a real tyre that will run just the same as natural rubber tyre. The Butyl rubber, despite our hardest efforts, has not yet got to the point where it will stand hard punishment. Therefore you have got to accept it as a light-duty tyre, not suitable for heavy service work."

It seems that the real costs in mass production will be below this estimate.

The quality of Buna is still far superior to Butyl. Yet for a long time Standard Oil has understated the technical possibilities of Butyl according to the view of many experts. Far fewer experiments have been made with this material than with Buna. Before and after Pearl Harbour, "for more than a year, Standard has known that Acushnet [Process Company] had quickly and

successfully solved the problems of rapid vulcanization and adhering Butyl to metal. There is no evidence that this knowledge was ever passed to the rubber companies which tested Butyl tyres."

The strategy of Standard Oil was to delay the development of the Butyl process in America, according to Robert Hunter of the Antitrust Division of the Department of Justice. Standard Oil had offered to issue licences for the Buna patents (production of high-quality and relatively expensive synthetic rubber) to all rubber manufacturers. At the same time information on the possibilities of Butyl production was withheld in order, apparently, to divert the interest from the new material.

Overwhelming evidence has been supplied by Mr. Hunter in support of his contention that Standard Oil pursued a particularly intricate policy toward the rubber manufacturers. They were offered a chance to participate in the development of the Buna type of synthetic rubber. They were to finance the Buna plants. At the same time, the Butyl process was kept a secret. It is apparent that Butyl was to be the big stick which Standard Oil wanted to keep in reserve to whip the rubber manufacturers into line. The rubber companies would have found out too late that the owner of the Buna patents was in possession of another patent permitting the manufacture of a cheaper synthetic rubber which could undersell their product.

The superiority of Butyl over Buna from the mere cost point of view was known to Standard Oil as early as 1938. E. V. Murphree, of Esso Laboratories, wrote to Mr. Howard on August 19, 1938:

> "Considering the rapid progress which is being made in improving the properties of the copolymer, and considering the raw materials from which it is made, it is my feeling that it [Butyl] represents a more promising material than the I. G. Buna, although it has not been tested nearly as thoroughly. I have written to you previously pointing out the desirability of tying up with some rubber company in order to carry this development along more rapidly. I still feel that such an arrangement is very desirable."

It is reported that the Butyl experts of Standard Oil were and still are "enthusiastic" about the possibilities of the new material, but they also felt disappointed with Standard Oil because at that time it did not heed their suggestion to experiment with Butyl at an American rubber plant. H. W. Fisher, manager of the

Commercial Department of Standard Oil, wrote to Mr. Howard on May 5, 1938:

"Dr. Frolich and I both concur in the opinion that we have reached a stage in the development of copolymer where it would be very advantageous to be able to establish contact with one or more of the major rubber companies. Phil Young advises me, and Dr. Frolich concurs, that we have filed sufficient patent applications on the manufacture of the material and on the major uses so that we can feel free, from a patent point of view, in presenting this material to outsiders, at least in a limited way."

Again, on June 22, 1939, R. P. Russell, Vice-President of Patents Development Company, a subsidiary of Standard Oil, wrote to Mr. Howard:

"I have talked this matter over with Messrs. Fisher, Hopkins, and Murphree, and I think we are all agreed on the following: We ought to be working vigorously with a U.S. tyre manufacturer to explore the possibilities of application of our various copolymers for applications in the tyre business."

Mr. Howard refused to concur with this request of his own experts who did not sufficiently understand his strategy. During this period only I. G. and Nazi rubber manufacturers were enabled by Standard Oil to experiment with Butyl.

When war in Europe broke out, practical tests with Butyl had not yet been made in America. It was already certain that Butyl had a great future, but it was impossible to state how far infantile diseases of the new material would withhold it from practical use.

On March 7, 1940, during the second year of the present war in Europe, Mr. Howard still advised the Executive Committee of Standard Oil "to hold off some time longer on any disclosure of Butyl rubber" as "our natural course".

A full year passed without any further action, despite the announcement of Standard Oil's own experts that Butyl was sufficiently developed to be tested by American tyre manufacturers. Finally, on June 3, 1940, an agreement was made with the Firestone Company to experiment with a few Butyl tyres. On the following day, W. S. Farish, president of Standard Oil, notified the American public for the first time about the discovery of Butyl.

Again months passed without any further action being taken to promote the synthetic material, although it had become a strategic war material. Finally, three months after the announcement by Mr. Farish, the construction of a Butyl pilot plant was taken under consideration. Mr. Howard mentioned such a project at the meeting of Standard Oil's Executive Committee on August 6, 1940. He said, according to an inter-office memorandum, that

> "it would be his preference that we [Standard Oil] not invest any considerable sums in the manufacture of Buna rubber, but give such aid and advice as might be helpful. He [Howard] preferred, in view of the greater possibilities of our interests in Butyl rubber, to advise the Committee that we are considering building a plant to manufacture 10,000 tons per annum of Butyl rubber, but that if the Government would be interested in giving protection to the extent of 5¢ per pound to the whole rubber field, our interests might be willing to construct a plant to manufacture up to 30,000 tons of Butyl rubber per annum on a five-year contract basis."

The project for a small Butyl pilot plant was later again postponed. "With the permission of the Committee we [Standard Oil] should, however, like to hold these plans for the 30,000 tons Butyl project in reserve for the time being", wrote Mr. Howard on October 7, 1940, to the chairman of the Synthetic Rubber Committee at the Advisory Council to the Commission of National Defence.

Mr. Farish finally reported to the Truman Committee that "at the present time, April 1942, the rubber companies know how to make Butyl rubber tyres which will last as long as 10,000 miles when used on passenger cars which are operated at less than 35 miles per hour".

The competitive position of Butyl against Buna can be derived from the following calculations of Standard Oil experts. A plant for the production of 300 tons of rubber daily or 109,000 tons annually would require an investment of $49,600,000 if the Buna-S process is applied, compared with $23,600,000 for the Butyl process. Buna-S can be produced for 14.4 cents a pound, Butyl for about 7 cents. Outstanding experts like Mr. Houdry are convinced that synthetic rubber can actually be produced at a cost of 4 to 5 cents a pound.

An astounding conclusion can be drawn from the above cost figures: Synthetic rubber is already competitive with natural

rubber. This fact was not fully revealed in the estimated costs of production which Mr. Howard communicated to O. P. M. According to his inter-office memorandum of January 16, 1942, Mr. Howard advised O. P. M. that the costs of production of Butyl must be estimated at 15 cents a pound, one and a half times more than the cost figures of Standard Oil experts. A few weeks later Standard Oil found out that the production of Butyl would cost much less than it had previously announced. Production could be doubled without additional outlay of fixed capital, thus reducing the discrepancy between official and real costs of production.

It is technically possible to start mass production of synthetic rubber, in particular of Butyl, within a few months. The only condition is that refineries which are already in existence be utilized. Of course, construction of new plants as projected by the oil companies which were members of the international oil cartel (C. R. A.) would delay production for at least fifteen months or even two years. Many independent manufacturers and experts have raised the question why the quicker and cheaper way for mass production of synthetic rubber was not followed when the synthetic-rubber programme was laid down. A number of independent oil manufacturers were prepared to initiate such a project. At the begining of 1942 they supplied convincing evidence that they were able to start production of synthetic rubber within six months, involving only relatively small outlay of capital and little use of scarce materials. Refineries already in existence were at their disposal. First-rate experts sponsored the plan, yet it was rejected. The impression prevailed that Standard Oil did not want any "outsiders" to manufacture Butyl. No licence for Butyl had been issued eight months after Pearl Harbour. According to the testimony of a leading independent oil manufacturer from Texas, the scheme of Standard Oil is "to get the Government to build as defence plants—which Standard would have a right to buy at greatly depreciated value after the war—catalytic plants which will produce the highest priced Butadiene during the war (taking fifteen months to two years to build) but which are easily converted into extremely satisfactory gasoline producers".

We have not dealt here with what to many agricultural states seems to be of paramount importance—how to use the crop surplus of grain for production of alcohol and of synthetic rubber. Secretary of Agriculture Wickard announced that "about

80,000,000 bushels of wheat or corn would be required to produce 200,000,000 gallons of alcohol, which in turn could produce 220,000 tons of butadiene. This would make approximately 240,000 tons of synthetic rubber." The 800,000-ton synthetic programme provides for only one plant where industrial alcohol is to be used for manufacture of rubber. The factory is under the management of Union Carbide & Carbon, one of the leading chemical corporations.

The hearings of the Gillette Committee have dealt with technical possibilities for production of alcohol and rubber from grain. It should in future be possible to utilize national crop surpluses in new industrial processes and for synthetic production of rubber, and in this way contribute to solving the supply problem for synthetic rubber and high-octane gas. The synthetic oil and rubber processes may thus initiate a new integration of industry and agriculture.

Standard Oil asserted before the Truman Committee that the co-operation between I. G. Farben and Standard Oil in the field of rubber and other synthetic processes had not impeded, but, on the contrary, advanced the knowledge about the new processes in America. Therefore Irving Lipkowitz, member of the Anti-trust Division of the Department of Justice, commented in his testimony:

> "Standard Oil ought to tell this Committee whose idea it was to dismantle the plant [Baton Rouge] at that time. Also, what steps were taken then to dispose of the plant without dismantling; why, in any event, it could not have remained intact a little while longer, considering the fact that it had been standing idle for 4½ years, before September 15, 1939.
>
> "At Baton Rouge, research had been conducted by a Jasco staff which was composed of both Standard Oil and I. G. Farben people. But in Germany, I. G. Farben conducted its research without the direct participation of Standard Oil technicians, the results of such research were available to Standard Oil only in so far as I. G. Farben saw fit to report them. . . . In that connection, it is significant that Standard Oil cautiously qualified its reference to the progress being made in Germany with the phrase, 'so far as we know'."

The story of the experimental pilot plant of Jasco at Baton Rouge is especially illuminating. Several million dollars were invested in this plant because I. G. Farben originally believed that

acetylene was the best raw material for synthetic rubber. Acetylene is the initial starting compound for the production of acetic acid. Standard Oil needed huge quantities of this acid, and used the Baton Rouge plant to make it, starting with acetylene.

The results were apparently disappointing from the viewpoint of synthetic rubber. But acetic acid has astonishing qualities. It is basic material for many other synthetics—rayon, safety photographic films, several types of plastics, paints, lacquers and varnishes, materials of strategic importance for a war economy. Frank A. Howard prided himself on the progress of work in the Baton Rouge E plant.

> "We believe that the Baton Rouge E project has a good chance of turning out to be the lowest-cost acetylene producer in the world. We propose to put this E project into definite commercial form within the next few months by enlarging the plant into a 20 or 30 ton per day acetic acid plant."

Standard Oil wrote to the Western Cartridge Company on January 30, 1936, that "we believe our process for making acetic acid and hence for making acetic anhydride is the cheapest existing process".

During several years important experimental work was done at the Baton Rouge plant. It was of great strategic importance. Yet in 1939 it was decided to discontinue this work. The decision was executed after the start of the war in Europe.

This successful pilot plant was closed and dismantled, the Department of Justice charged, in accordance with a request of I. G. The German trust insisted it had discovered that the cheap production at the pilot plant was "disturbing the market" and was impeding another company, Union Carbide & Carbon Corporation, with which I. G. Farben did not want to compete. In reality, however, an agreement had already been worked out with the latter company, according to which Union Carbide would market the output of Baton Rouge. Nevertheless, in spite of amazingly successful work at Baton Rouge, production and research halted. The valuable and costly experiences were apparently thrown away. Jasco had paid the bill for this "experiment". It was, however, not quite useless, for I. G. Farben had built another factory in Germany, bigger than the Baton Rouge E plant, but according to the same model and applying the methods which had been derived from the experiences in Baton

Rouge. This happened over two years after Hitler had come to power in Germany, just at the beginning of the armaments race.

Later, during the sixth year of Nazi rule in Germany, the German-Swiss electrical concern, S. A. Brown, Boveri & Cie., was interested in the manufacture of the above synthetic product, and obtained a licence from I. G. Farben for the construction of Brown, Boveri plants in Germany. Designs and sketches for a new factory, largely based on the experiences of the Baton Rouge E plant, were handed over to the German firm. Then Allis Chalmers Manufacturing Company, an American firm, also wanted to take advantage of these experiences, and applied for licences and technical assistance. The answer was a flat "no". I. G. Farbenindustrie wrote on November 25, 1938, from the German headquarters to an I. G. representative in Baton Rouge:

> "Allis Chalmers Manufacturing Company had approached Brown, Boveri, Mannheim, with a view to obtaining designs and sketches about the *rectifier* plant. B.B.C. has refused to grant Allis' request. We agree with you that such designs must under no circumstance be handed over to Allis Chalmers."

The I. G. agent answered along the same lines to his superiors in Frankfurt a. M. (Germany):

> "It seems to me that there is less likelihood that B.B.C. Mannheim will impart to competitors of ours the experience gained in conjunction with us than there would be in the case of Allis Chalmers, with which company neither Standard nor I. G. has so far had close business relations."

Standard Oil was quite aware of the important results and of the great possibilities of further work in Baton Rouge. It did not want to shut down and dismantle the plant. When, however, I. G. Farben "expressed the opinion" that the work in Baton Rouge should not be continued, Standard Oil granted this request, the Department of Justice says.

The following cable of Mr. Pickardt, representative of I. G. in Baton Rouge, addressed to the Nitrogen Division of I. G. in Germany, dispelled any doubt:

> "Standard suddenly proposed not to stop operation of the E plant, but to continue operation. . . . We expressed the opinion that in the interests of Jasco and I. G. it was not justified to continue operation of the E plant in the present form."

At a later date another representative of I. G. Farben indicated that the work started in Baton Rouge should be completely discontinued. Otherwise the results of the work would have to be made available to Jasco and Standard Oil, and this was to be avoided. The following letter makes this clear:

"Dr. C. L. Brown,
Baton Rouge.

"Dear Dr. Brown,

". . . You will note from Dr. Hochschwender's letter [Dr. Hochschwender was one of the leading executives of Chemnyco, I. G.'s agency in America] that the I. G. has done some work on this [acetic anhydride] and that he is to get further information. Dr. Hochschwender does not feel for the present that Jasco should do any work on this problem. Since any work we would ordinarily do would come under the Jasco field, I suggest that we abandon the problem for the present.

"Very truly yours,
"E. V. MURPHREE."

Officials of Standard Oil, testifying before the Senate Patents Committee, denied that the Baton Rouge plant was closed because of I. G.'s orders. They said it had proved a failure and that plans to dismantle it had been made before the war.

Standard Oil's experiences with Baton Rouge did not diminish its interest in the Jasco partnership with I. G. The grip on the patents which prevented any other firm from working in the same field sustained the belief that Jasco would eventually be in control of something bigger than synthetic production of raw materials for photographic materials or lacquers, namely of synthetic rubber.

Only later historians will be able to write the full inside story of synthetic rubber, of the C. R. A., of Jasco, Standard Oil, and I. G. Farben. We have pointed out basic facts which reveal the impediments to the rise of synthetic production. We shall now have to leave this sphere and devote our interest to other materials which are also pivotal for total war and for the new industrial revolution.

CHAPTER XIV

LIGHT METALS

CLOSE EXAMINATION of a captured Nazi armoured car led to results that surprised the experts. A heretofore unknown metal alloy had been used for the construction of this car. It was extremely light, and yet as strong as the best steel. This discovery may have given a clue to the apparent mystery of how Nazi motorized forces were able to extend their radius of activities far beyond what had been expected.

Many miscalculations would have been avoided if the new possibilities opened up by light metals had been more carefully studied in America. They were explored to the utmost in Germany, where large-scale experiments with new alloys made of light metals had been made before the war began. The construction of the 10,000-ton warship *Graf Spee* (sunk early in the war) largely relied on use of light metals. Submarines are apparently able to leave Germany with a greater load of fuel than is possible for submarines constructed in England or America.

Production of light metals was in special favour in Germany. Anton Luebke, a Nazi expert on German war economy, boasted in his book, *The German Raw Material Miracle*, that the Third Reich had defeated the foreign world even before the war started. One of his arguments was the fact that Germany had become the main producer of light metals.

> "Today [1939] Germany is the biggest producer of light metals in the world. . . . In 1933 German production equalled the total output of France, Norway, and Canada, and amounted to about 50 per cent of the total output in the United States. In 1935, however, German production was four times the French production, six times the British and Norwegian production, four times the Canadian production, and 16,000 tons bigger than the output in America."

But in the field of light metals the Third Reich had reached an even greater superiority over the rest of the world than the above figures indicate. In the United States, production of light metals was limited almost entirely to aluminium. But aluminium is only one of the light metals, and the heaviest of them at that. There are other metals and alloys which are lighter and as strong as, or

even stronger than aluminium. These alloys contain magnesium and beryllium. In the Third Reich, magnesium has been used in the manufacture of aerial bombs, telephone switch parts, engraving plates, and various instruments.

Mr. Luebke claimed that on the eve of the Second World War Germany was producing almost three-quarters of the world output of magnesium—over four times what was produced in America. According to his report, the Reich produced 21,000 tons of magnesium in 1937, compared with 5,700 tons in 1933. These figures are considerably higher than estimates published by the United States Bureau of Mines. According to the latter's figures, Germany produced 19,000 tons of magnesium in 1940 against 12,080 tons in 1937. But even the Bureau of Mines came to the conclusion that in 1937 Germany had 61 per cent of the world production of magnesium, compared with only 10 per cent in the United States. In 1940 Germany still had a share of over 50 per cent, against a share of 14 per cent for the United States.

With respect to beryllium production, Germany held an even more dominant world position than in aluminium and magnesium. Beryllium is the king among the light metals, and it is relatively cheap, for it is derived from raw materials that occur in great abundance all over the world. Aluminium is about one-third as heavy as steel, magnesium is about 50 per cent lighter than aluminium, and beryllium is the lightest metal in the atomic table, though beryllium alloys have a hardness with which no other metals can compete.

The revolutionary changes in technique made possible by light metals can scarcely be exaggerated. Giant stratosphere planes can be manufactured which will weigh less than a small double-seater of today. Mammoth tanks may be moved with the ease of a racing auto. Tooling machines will become simpler, lighter, and less expensive. New possibilities for decentralized manufacture arise, simultaneously increasing industrial efficiency. These technical changes may sound fantastic today. They have, however, already started. Total war threatens defeat for those who do not make use of them. Even the victorious Power will have to pay a high price for any unnecessary delay in the development of light metals.

"As a matter of fact," stated Mr. Andrew J. Gahagan, president of the Beryllium Corporation, "we could write the history of the world in terms of metallurgy. The iron deposits in England made it possible to produce iron cheaply, and made the industrial revolution. The development of steel made trains possible; the de-

velopment of beryllium alloys is going to mean new and improved types of motors, telephone instruments, airplanes and a thousand and one changes in our life."

The Reich had subsidized extensive research work on the new technical possibilities opened up by light metals. Nazi victories in international automobile races were largely the result of such improvements. German automobiles running in international races were equipped with beryllium-nickel valve springs. Yet Germany had touched only the mere beginnings of these technological developments. Natural conditions are as favourable, or even more favourable, for other countries, in particular for America. It has been calculated that 3.45 per cent of the earth's crust to a depth of ten miles consists of magnesium. It can be extracted from sea water (0.14 per cent). In Germany it is largely manufactured from by-products of the potash industry (brines). In the United States salt brines can be extensively used as raw material. Technically, it would have been easy to produce the new material here in even greater quantities than in Germany. How was it possible that the United States did not even reach the German level of production and was less prepared for using the new material than the Third Reich?

All three light metals in which Germany had the leading position at the outset of the war were, in the United States, subject to patent monopolies which prevented or curbed the expansion of the new industries, and these monopolies were to a great extent related to Nazi interests.

America's aluminium industry was dominated by one single enterprise, Alcoa (Aluminium Company of America). Its spokesman expressed the view at the beginning of the war that the capacity of the industry ensured sufficient supplies of aluminium even in an emergency situation. A year later aluminium had become one of the scarcest strategic materials. Every scrap of aluminium had to be collected. Alcoa had completely miscalculated the potential demand for aluminium and was unprepared for the sudden need for more production. Was this accidental, and have the underlying reasons which held up the development of the industry in the past been eliminated?

Alcoa's control of America's aluminium industry relied on the possession of patents as well as on the ownership of raw-material resources. It owns extensive bauxite mines in Arkansas and in South America. A comparison with the structure of the German aluminium industry is illuminating. The latter also is under con-

trol of one enterprise, the government-owned Vereinigte Aluminiumwerke (Velag). It formerly manufactured aluminium mainly from bauxite imported from Hungary. The expansion of the German aluminium industry during the late 'thirties was, however, based on new or modified processes enabling Velag to utilize cheaper and more accessible domestic raw materials—for instance, alunite and even clays. These processes are also extensively used in Japan. In America, however, such an expansion of the aluminium industry did not occur. How can we explain this fact? Did Alcoa fear that such an expansion would reduce the importance of bauxite and make it easy for competitors to enter the industry without owning bauxite deposits?

Thurman Arnold stated before the Patents Committee:

> "To Alcoa's monopoly, the use of the processes covered by those patents would have been disastrous, for its monopoly is basically a monopoly control of bauxite resources; its control of processing and fabricating facilities would have been much easier for a competitor to challenge. As a result, when a potential competitor appeared in this country with the Haglund patents for making aluminium from something besides bauxite, they finally reached an agreement with him on a very remunerative basis. He received, I believe, about a million dollars and employment as a consultant at a fancy figure. The process never went into production; and Alcoa only recently was referring to the processes as 'experimental', although we are informed that Italy has had them in production since 1928."[53]

Under war-time conditions the government has provided for financing a number of aluminium plants. It seems, however, that the influences which formerly curbed the rise of the industry have not vanished. The Chief of the Aluminium and Magnesium Section in O. P. M. was Arthur H. Bunker, a dollar-a-year man who receives an annual salary of sixty thousand dollars from the Lehman Corporation, an investment trust that has been, and probably still is, a stockholder of Alcoa. Frank Eichelberger, president of Kalunite, Inc., bitterly complained before the Truman Committee that despite the national emergency his company was unable to proceed with the construction of aluminium plants where new processes which are unpopular with Alcoa were to be used.

Mr. Bunker told the Truman Committee that he had no specific knowledge of the experiences in Germany or Japan on production of aluminium from clay or other raw materials besides bauxite.

He said, "You could make aluminium from clays, and you could have a great many headaches doing so". What are these "headaches"? To this question he was unable to give an answer because Alcoa had not operated a pilot plant where the nature of the "headaches" and the possibilities of getting rid of them might have been studied.

According to Dr. Landis, an expert quoted by Mr. Bunker, Germany was producing only 3,000 tons of aluminium from clays, "different in their nature from the clay with which we had to deal". This figure does not seem to be accurate, or at least it is outdated. The sites which were chosen for new aluminium plants in Germany indicated that production from clay was greatly extended, though Germany never was in desperate need of an *Ersatz* for bauxite. It always could rely on the bauxite deposits in Hungary and other neighbour countries. It seems, on the other hand, that Alcoa has never really investigated why American clay should be so different from clay in Germany.

The aluminium industry can be expanded relatively quickly because a great variety of raw materials may be utilized, and only a relatively small number of experts are needed for a single plant. Such an expansion of the industry would make it impossible for Alcoa to maintain its monopoly control after the war.

Serious charges have been made that the war-time expansion of the aluminium industry has been held up as a result of Alcoa's efforts to preserve control of the industry. Paul J. Raver, Administrator, Bonneville Power Administration, for instance, testified before the Truman Committee about the vain efforts to utilize favourable natural conditions in the North-west for the construction of aluminium plants independent of Alcoa. The project provided for "the availability of qualified plant managers and supervisors, outside of the Aluminium Company of America. Reynolds Metal, for example, has certain facilities for training additional men." According to I. W. Wilson, vice-president of Alcoa, only a dozen supervisory officials had to be trained experts, but Mr. Cortesi and Mr. Jones, then of O. P. M., with whom the project was discussed, insisted on using no one except officials of Alcoa in managerial posts, according to the testimony of Mr. Raver. The project was rejected because Alcoa had declared that it could not spare any personnel.

The post-war struggle for private monopoly already throws dark shadows on war-time plans. This point was stressed by Mr. Raver before the Truman Committee on August 23, 1941. He said:

"After the war emergency is over and production for defence is curtailed, the Government plant or plants will presumably stand idle, unless the private concerns take them over and run them. In other words, these Government plants will be real war babies after this emergency, unless they are now designed and planned, in their installation, in such a way as to enable private capital to take them over and continue to operate them after the war emergency is over.

"From a monopoly point of view, it seems to me that if we had several plants out here [Portland, Ore.], operated by independent operators, we have a much better chance of those plants continuing in operation after the emergency is over than we do if the entire operation is under the control of the present monopoly that controls that business in the United States. . . . If the Aluminium Co. control the entire aluminium production in the North-west, it will be their choice, when this emergency is over, as to what plants will continue in operation, and the Government, not having developed any other operators, will be at their mercy in that decision."

According to Mr. Bunker, testifying before the Truman Committee, there will be in future five operating companies in America's aluminium industry (Alcoa, Reynolds Metal Corporation, Union Carbide & Carbon Corporation, Bohn Aluminium and Brass Corporation, and Olin Corporation), instead of two as at the beginning of the war. But among these five companies Alcoa remains in control of the greater part of the industry. It is unlikely that the other four companies will engage in a price-cutting competition among each other and against Alcoa.

The facts on *magnesium* are even more revealing than those on aluminium.

This metal, that is cheaper and lighter than aluminium, was originally developed in America. At the end of the First World War at least eight American firms were producing magnesium and selling it at a price of $5.00 per pound. Two years later the new industry was controlled by only two enterprises, one of them the American Magnesium Corporation (A. M. C.), a subsidiary of Alcoa since 1919, the other the Dow Chemical Company. The firms were competitors. As a result the price fell from $5.00 to $1.60 in 1920 and 55 cents in 1927, compared with 20 cents for aluminium. Then A. M. C. and Dow stopped competition, and came to an understanding according to which A. M. C. discon-

tinued production of magnesium and agreed to purchase magnesium it needed from Dow. According to charges brought by the Department of Justice against A. M. C., Alcoa and Dow had agreed that the price for magnesium was always to be one-third higher than the price for aluminium. This clause made sure that no real market would be created for magnesium. Alcoa feared that its investments in aluminium would suffer from competition with magnesium. Such an arrangement could become effective only by having ascertained that foreign—in particular, German—producers would not take advantage of the high price schedules for magnesium and export to America. Thus a situation again arose where an American corporation utilized the aid of German interests in order to protect its American monopoly. The result was a drastic curtailment of production.

Norman M. Littell, Assistant United States Attorney General, stated in a lecture before the Indiana State Bar Association:

> "And so it is that with a productive capacity in the aluminium industry inadequate to meet the numerous demands of the expanding airplane industry, we are also simultaneously confronted with a limited capacity for the manufacture of magnesium, the only competing metal! This is all the more appalling when it is realized that of the sources for magnesium, brine deposits and magnesite are plentiful in this country."

In Germany the government was the main producer of aluminium, while magnesium was supplied mainly by I. G. Its magnesium business in the Reich was quickly expanding. The price was not higher than that of aluminium. Only in the United States was magnesium much more expensive than the older light metal. In 1928 Alcoa was in contact with I. G. about an agreement which was to protect the monopolistic market control in this country. As a result, S. K. Colby of Alcoa wrote to Walter vom Rath, leading executive of American I. G., the United States subsidiary of I. G. Farben, on January 18, 1929:

> "Confirming our several conversations regarding the desirability of an *entente cordiale* between our respective companies, but more particularly referring to the possibility of a mutual interest in the manufacture of metallic magnesium to which the Dow Chemical Company of Midland, Michigan, must be a party . . .".

The final result of these negotiations was the formation of the Magnesium Development Company (1931), in which Alcoa and I. G. pooled their magnesium patents. At that time the primary interest of I. G. was to strengthen the rise of its private world empire and to obtain a permanent monetary return from the American magnesium monopoly. At the same time it was also interested in keeping America's production of the lighter-than-light metal on a low level, thus weakening the competitive strength of all American manufacturers. Magnesium Development Company never intended to produce magnesium. It was only a patent-holding company. Dow Chemical Company, which also held some magnesium patents, was the only firm that was granted a licence. A special agreement with Dow provided, however, for restrictions of production and of sales. The maximum capacity to which Dow was allowed to extend its magnesium plant was 6,000 tons a year. This stipulation was still effective in 1940, when German production of magnesium was estimated at 60,000 to 75,000 tons, or over ten times the maximum capacity of the industry in America. Dow had also carried out the obligation on which I. G. Farben especially insisted, not to export magnesium to any European country, except 150 tons to a British customer of Dow—and, of course, Germany. The Reich purchased a great part of Dow's magnesium output, so that American industrialists had little opportunity to become acquainted with the properties of magnesium.

Alcoa and I. G. were wholeheartedly co-operating in the joint enterprise in order to restrict the growth of the industry. I. G.'s policy was clear: the less magnesium produced in America, the greater the military strength of the Third Reich. But why did Alcoa fall in line with I. G.'s policy?

America's big aluminium supplier apparently feared that aluminium and bauxite interests would depreciate if magnesium became an important light metal. The relative cheapness and greater effectiveness of magnesium would certainly have compelled Alcoa to reduce the price for aluminium, if the two light metals had been competitive, but this competition was suppressed before it started. Aluminium was a young industry compared with the old-established iron and steel plants; yet it had already created vested interests that sought to protect their stake in the aluminium industry by preventing the rise of a new rival, magnesium.

The Magnesium Development Company was an important key

position for I. G. and the Third Reich in America. Did Alcoa realize the peculiar character of its partnership with I. G.? M. D. C. was one of the most important sources of information for the Nazis on war production in America. One of the leading experts of M. D. C. was Heinz Menking; he was employed in accordance with a suggestion of I. G., at a salary negotiated by the latter. Mr. Menking was an especially trusted Nazi party member whose correspondence with I. G. was signed with "Heil Hitler". Nazi experts or "engineers" often came to America, and Mr. Menking or M. D. C. arranged visits for them to American aircraft plants, which were the main customers for magnesium alloys.

In 1934, when the first preparations for the new German armaments programme under Hitler were being made, Mr. Menking was requested by his superiors in Berlin to send a special report revealing the uses of magnesium in American aircraft engines. Mr. Menking prepared and sent his report on March 15, 1935. This work, which was financed and supported by M. D. C., was of great military importance; it tabulated with German thoroughness all parts of particular engines fabricated in the United States from designated magnesium alloys, and mentioned in particular seven American concerns. Mr. Norton, vice-president of A. M. C., made sure that this report was sent out as "extremely confidential", because, as he wrote, "it is customary in the U.S.A. never to use information of this sort in publicity without the written approval of the company whose product is mentioned". This approval was, of course, never asked for.

President Harvey of M. D. C. wrote in a letter of October 20, 1936, to his Los Angeles sales manager, W. C. Lynch:

> "We are not particularly keen to ask for [War Department] permission [for Menking to visit aircraft factories], inasmuch as it would throw into the open the fact that Mr. Menking is a German citizen and in our employ."

After Pearl Harbour, Alcoa, Dow, and M. D. C. temporarily renounced their control of magnesium patents, after having signed a consent decree. But "a reasonable royalty might be charged after the present emergency".

The least-known light metal, beryllium, may have the greatest future. Mr. Andrew J. Gahagan, president of the Beryllium Corporation and the Beryllium Corporation of Pennsylvania, a sub-

sidiary, reported at the hearings before the Truman Committee how he and his associates were trying to develop beryllium. They began with independent research in this field when they discovered that a little-known company, the Metal and Thermit Corporation, had already applied for the corresponding patents. Thereupon Mr. Gahagan approached this company in order to obtain a licence for the production of beryllium. The negotiations with Dr. F. H. Hirschland, president of the Metal and Thermit Corporation, lasted over three years. Finally Mr. Gahagan found out that the Metal and Thermit Corporation was not the real owner of the patents. It was only holding them for Siemens and Halske, Germany's biggest electro-technical concern.

Mr. Gahagan then travelled to Berlin, where he experienced further surprises. Siemens & Halske had transferred the patents to the Heraeus Company in Hanau, near Frankfurt-am-Main. Financed with government money, Dr. Erich Rohn, a former member of the German Army Staff, for which he did most of his experimental work, "has the most wonderful metal-working plant at Hanau, the equivalent of many millions of dollars in this plant, and equipment that will produce alloys, that I [Gahagan] don't believe can be duplicated anywhere else in the world". Mr. Gahagan finally took over the American beryllium patent rights. But his production of beryllium remained at so low a level that beryllium is still almost unknown in America. It seems that in this case the original German owner of the patents, after a delay of years, was willing to give away patent rights to an American company which was not extremely potent financially and therefore could not exploit the patent rights on a large scale.

Mr. Gahagan told the Committee that the patent rights had not been used against the few competitors who also started production of beryllium because he "didn't want to create a sales resistance". But he also hinted that in future other producers would have to expect suits for infringement of his patent rights.

The contrast between Dr. Rohn in Hanau, who, closely related to the Army Staff, was supplied with almost unlimited funds, and Mr. Gahagan was strange, as the latter was an individual businessman seeking a licence which he could exploit only on a small scale.

This, in brief, is the story of light metals in America. It makes clear why the proud words of Dr. Luebke, the Nazi expert, on German supremacy in this vital field were no hollow boast.

CHAPTER XV

GENERAL ELECTRIC AND KRUPP

"THERE IS something fundamentally wrong with American industry," wrote an expert of Krupp, Germany's cannon king, during the second year of Nazi rule in Germany, when the Third Reich began to prepare for total war. At that time Krupp made an investigation of the war preparedness of foreign countries and their ability to convert their industries from peace to war-time production. Dr. E. Ammann, Krupp's expert, studied one particular angle: cemented tungsten carbides. This metal alloy had been known for over ten years. It did not revolutionize techniques, as did synthetic processes. Its immediate effects were, however, of even greater importance, for it increased the efficiency of the old industrial technique. The new material was a great success because of its extreme hardness. Tools the edges of which were filled with the tungsten alloy worked better and longer. In the same manner it improved many other instruments and implements essential for warfare.

The "magic of tungsten carbide" is due to its hardness and to "the fact that it has a melting point of about 2,800 degrees centigrade", wrote *Fortune* in January, 1942. The article continued:

> "These two properties make it so far superior to high-speed (tungsten alloy) steel as a cutting edge for machine tools that there is hardly a basis for comparison. In many machining operations substitution of tungsten carbide for high-speed steel multiplies the rate of production at least 500 per cent. And Germany retained unquestioned leadership in the use of tungsten carbide after the Armistice, even though Krupp licensed other producers throughout the world. Britain, France, and the U.S. were sluggish about retooling, and it is estimated that in 1938 Germany had twenty times as much tungsten carbide in use as in the U.S. This—according to many experts—is one of the great secrets of German rearmament. These experts also think that without tungsten carbide it would have taken the Reich twice as long to achieve half the results. Furthermore, fragments of shells picked up on various battlefields indicate that Germany is using tungsten carbide for projectile tips and even may have developed a superior lightweight armour plate consisting of thin layers of carbide and steel."

The report which Dr. Ammann submitted to the Krupp executives revealed to what extent America and Germany had at that time made use of the new material:

> "It is striking that the United States, in spite of having the most important iron-working industry and excellent cemented carbides at its disposal, is employing cemented carbides only to a very modest extent."

Consumption of cemented carbides per unit of produced steel was twenty-two times greater in Germany than in America. The situation was even more unfavourable for the United States if we take into consideration the fact that "scarcely 5 per cent of the entire turnover in Germany is used for drawing dies, while in America about 35 per cent is used". Dr. Ammann added:

> "It must be said that American industry certainly had time and opportunity enough to check on the advantages and the economy of cemented carbides in American factories during the ten years since cemented carbide was invented. The highly developed American machine-tool industry surely was in a position to provide the necessary machinery. If cemented carbides were introduced generally American domestic production of tungsten would be sufficient to cover the entire tungsten requirements of the American machining industry."

During later years the situation did not become more favourable for America. By contrast, German industry took full advantage of the invention. It began to use the alloys to harden steel, and made large-scale experiments and special installations in order to take full advantage of cemented carbides. At the same time the material remained almost unknown in America except among experts and a few large corporations which, because of its high price, bought the material only on a limited scale. In Germany the price was declining from about $45 a pound, at the time when the above report was written, to less than $40 when the war broke out. In America the price was raised from $50 to over $450 a pound, and only later reduced. At the beginning of the war the price still was at least five times as high as in Germany.

As a result, the efficiency of most American industries was below the level of German industrial efficiency and the quality of many war materials was inferior to that of corresponding German products. Furthermore, German industrialists had acquainted them-

selves thoroughly with the new product over a period of almost twenty years. America was more or less lacking in this knowledge. It was relatively easy to increase production of cemented tungsten carbide. It, therefore, is now used by many factories and for various purposes, especially in machine tools, in shipbuilding, in plane and motor-car factories. Within two years America's consumption of this important material has risen more than fifty times. It would, however, be false to conclude from this fact that we are dealing only with things of the past if we raise the question: Why was there such a delay in the development of this material in America? For it is impossible to find out the possibilities for effective use of this material within two years, after having neglected research or experimentation for twenty years. It would seem that these studies should be made by all the varied enterprises which can contribute their experiences. There is, however, only one enterprise at present in the United States which has more or less monopolized this work: the Carboloy corporation, a subsidiary of General Electric. It has succeeded in supplying America with greatly increased quantities of cemented carbide and it has organized a technical service which teaches or facilitates the use of the new material. How far does this work correspond to its potentialities? How far is America now keeping pace with corresponding developments in Germany? This question cannot be answered reassuringly because of a past the consequences of which have not yet been eradicated.

How was it possible for America to have remained backward in the field of tungsten alloys for so many years?

Krupp, the German armaments concern, was in control of basic patents for the manufacture of this material. But this case is quite different from the story of I. G. Farben. Krupp did not make use of the patent in order to prevent production in other countries. It was willing to issue licences as a matter of strategy and to be satisfied with the royalty payments. This policy derived from very practical considerations. Production was not complicated, and could easily be started by competitors. The basic materials were, then as now, available in great quantities in most countries of the world. And finally, the patents Krupp held would have been declared invalid if they had been brought up before the court. This was the conviction of all experts, and for this very reason the patents were never tested—because such a decision would have made it impossible for any producer to monopolize the new product.

The Krupp firm itself was sceptical about the value of its patents and did not believe that it would be possible to monopolize such an important material in America, where the control of such a strategic key position by a foreign enterprise would arouse powerful opposition.

Mr. Lusk of (British) Thomson Houston wrote to Mr. Minor, president of International General Electric, on December 23, 1935.

> "We are as satisfied as one can ever be in connection with any patent question that the Krupp patent is thoroughly bad and that their action against us has no chance of succeeding. As I have explained, however, on a number of occasions to the Osram [1] people, and as I have also explained to Krupps, we do not wish to see their patents declared invalid, and we have been prepared to do anything which was reasonable to avoid this."

The foreign policy of Krupp was decided by one of its leading executives, Dr. Alfred Klotzbach, who worked in close co-operation with the German Army Staff. One of the advantages which Krupp had over other German business enterprises was its intimate tie with the supreme military leaders in Germany, who were accessible to the Krupp executives without the red tape of the Party bureaucracy. Krupp got a free hand from them concerning the exploitation of the American patent rights for tungsten alloys because of the conviction that competitive production could not be decisively curbed anyhow. Dr. Klotzbach was greatly astonished when he found that from the narrow commercial viewpoint it was profitable to refuse licences in America and to curb export sales to this country. This peculiar situation arose because General Electric and its subsidiary, Carboloy Inc., sought the assistance of Krupp in order to gain sole control of the industry.

Thus a situation arose which is quite unusual even in the history of monopolies, where many strange events have come to pass. General Electric decided to acknowledge the patents of Krupp because they could be used to prevent competition in America. Krupp received royalties and special payments for a guarantee that the German armaments trust would not encourage production of this strategic material in America. During the armaments boom, when the entire German production of tungsten was

[1] German corporation, large-scale manufacturer of electric articles, especially bulbs.

needed by Germany herself, Krupp was compensated by General Electric for a promise not to export cemented carbide to America.

According to the agreement with the Krupp firm, Carboloy had the right to fix the price at which all importers and producers were to sell cemented carbide in America. Carboloy could successfully carry out this policy because, however shaky its patents, there were no competitors in the tungsten carbide field who dared to pit their modest forces against the financial might of General Electric in a long and costly court test. When finally Carboloy had reached the position where it was almost the only producer, the "absurdly high price" was reduced.

Thus Carboloy gained a position in America where it could dictate the price for the new material. The few competitive producers were squeezed out by raising the price to such a high level that the demand for the material sharply declined and made the production unprofitable.

In 1928 the parties that signed the agreement visualized a price in America of $50 per pound. But Carboloy first fixed the price at $453 a pound, 50 per cent more than the then price for gold. Between 1930 and 1936 the price was kept at about the same level. Then it was reduced to $200, with special rebates for some individual purchasers (Ford and General Motors).

Even Krupp protested against the price increases:

> "We cannot be satisfied with the present prices; according to German concepts they must be considered as illegal usury and the American public opinion seems to be quite similar. These prices constitute practically a hindrance to our import and are for this reason against our contract. Kindly wire us proposals concerning much lower prices."

Mr. Merrill, a research engineer employed by General Electric's "Works Laboratory", wrote to the executives of General Electric about a situation which was mystifying to him: a sales price of several hundred dollars per pound, while the basic material costs only $6.25. There are no special difficulties in the manufacture of carboloy.

> "A great deal of mystery has surrounded the production of this material since its inception. As a matter of fact, it is just about as complicated as making a good grade of concrete for a sidewalk: Grind up material, pass it through a mesh, put a

certain percentage of binder with it, press it into a cake and bake it."

Mr. Merrill also pointed out the absurdity of fictitious prices:

"With the absurdly fictitious prices which are being maintained for carboloy tips, were they to put on enough of this material to machine steel, they would of course sell much less than they do at present, which to my way of thinking is just negligible. Another absurdity in the present hook-up is in the milling machine operations. A good-sized milling cutter of 50 to 60 teeth with the necessary amount of carboloy to do a good job costs the customer approximately as much as a new milling machine to drive the cutter. These are a few of the high spots in the present situation."

Mr. Merrill did not understand that Carboloy wanted to keep consumption of tungsten at a low level—as a matter of policy.

At this stage of Carboloy's struggle for an American monopoly the war broke out. The Krupp executives tried to liquidate their foreign assets and to capitalize on their claims for royalties from Carboloy. Krupp always acted in accordance with the policies of the Nazi government. It expected a war situation with the result that America would not leave Nazi assets untouched. G. E.'s representative in Germany wrote, on December 11, 1939, the following letter to the American mother company:

"Our friends at the Osram company informed me yesterday that Krupp would be interested in capitalizing the royalties now being received from Carboloy. In other words, they would like to sell us exclusive rights under these patents until 1943 with non-exclusive rights under the same patents thereafter. In this connection, Dr. Louis has asked for an appointment with me in Zurich where we shall both be next week. They are quite anxious that the Krupp name be kept out of any correspondence particularly telegrams that might reach improper hands and therefore I shall refer to them in the future either as the European licensors under Carboloy contract or simply as Dr. Louis. . . .

"P.S. Since writing the above I have received your message through Mr. Minor also talked to Dr. Louis and Mr. Schurmann.

"They will now make us a proposition based on extending

the contract to 1952 and our making a lump sum payment for all hard metals—no matter what patents we use. I may get this next week and shall telegraph it to you at once."

Thus we see almost a repetition of the policy of Standard Oil by another big American corporation. Carboloy's policy in general was openly based on an association with Krupp which left control of all markets outside America to the Nazi firm. During the second war year Carboloy still made great efforts to pay Krupp royalties for the allegedly invalid patents. Furthermore, reports were sent to the Krupp representative in Switzerland indicating the amount of tungsten produced or sold in America. This report was an important source of information for the German government on America's capacity to produce armaments.

The Carboloy case exploded only by accident, as the result of the complaint of a manufacturer, Mr. Firthe, who wrote to the Federal Trade Commission on January 25, 1940:

"Our licensor is the Carboloy Company, Inc., of Detroit, Michigan, a subsidiary of the General Electric Company.

"These cemented carbide tools and dies are a most essential requirement of munition and mass-production manufacture. Our present costs show that we should be able to sell at far lower than the present prices. Large quantities of this material are now being manufactured in Germany, England and France, many times the total production of the United States. This situation is in our opinion brought about by the unreasonably high prices at which we are compelled to sell and by the very unfair scale of discounts which make it difficult and in some cases impossible for the small user to use this material. In many cases these prices are from two to three times what we consider a reasonable price to smaller users. We do not complain of the net prices brought about by the large quantity discounts to large users, but we do complain that we are not allowed to extend a relative discount based on true costs to the smaller user.

"We trust that some action can be taken soon as we have no wish to be a party to anything which might be construed as an unfair trade practice."

Then the Antitrust Division of the Department of Justice started an investigation of cemented tungsten carbide, with surprising results.

Only after Pearl Harbour were relations broken off. The international tungsten agreements could no longer be maintained. Carboloy had to stand on its own feet. It had the advantage of being the only American firm which was prepared for immediate increase of production of the strategic material. Thus the domestic position of Carboloy has become stronger than ever before. It controls 80 per cent of the industry during the third war year, compared with 60 per cent at the beginning. How will this position be used in the future? Will this material—in war-time—find such a widespread application that more producers will enter the industry? Or will Carboloy become the dominant world power in the field of tungsten alloys? Carboloy has already become the supplier of foreign countries which formerly were dependent on German deliveries and which, as part of the United Nations, have now to be supplied by America.

What happened to the shaky Krupp patents on tungsten carbide? Have they been turned over to General Electric on the basis of a private understanding between both companies, or are they in the hands of the American government's custodian for foreign properties? Mr. Zay Jeffries, president of Carboloy, who ought to be especially interested in this question, gave a mystifying answer to the Patents Committee:

CHAIRMAN: "Krupp had made some assignments of patents to American firms at or about the time the war broke out. Were any number of patents assigned to your concern?"

MR. JEFFRIES: "I do not recall what the most recent one is, but they sent some patent applications to us during the latter 30's."

CHAIRMAN: "Did any of those assignments occur after the outbreak of the war in September, 1939?"

MR. JEFFRIES: "I cannot say. That is, I do not know. But I can say this. There has been no patent application of any moment that has come from Krupp in recent years."

Have Krupp patents been transferred to Carboloy after the outbreak of war, and under what conditions? This question was left without an answer by the president of Carboloy, which gained control of the industry by strangling pre-war production with the help of shaky Krupp patents.

CHAPTER XVI

PLEXIGLAS AND PLASTICS

HAS THE "Iron Age" come to an end? Are we today entering the "Age of Plastics"?

It is not yet certain how far plastics will supersede iron, steel, other metals, cement, wood, and other natural products. Plastics have, however, already proved that they can replace wood, iron, glass, porcelain, and many other materials. The finished products have completely new qualities which pave the way for radical changes in the technique of manufacture and in construction work. They also make it possible to eliminate much complicated machine-tool work, replacing it by simplified machine casting.

It is technically possible to extend the capacity to produce plastics within a short time. Their development to date must be considered only as the first step towards a new technical world with practically unlimited possibilities.

When the war broke out production of plastics was still at an embryonic stage, yet patent monopolies and international cartels already curbed further expansion. They made it impossible for outsiders to compete with the small number of privileged producers, with the result that production or extension of the capacity to produce plastics was progressing only slowly before the new industry had reached the mass-production stage.

Private monopolies, in particular those controlling plastics, are an important factor in total war. German corporations, which held basic patents for plastics of strategic importance, tried to concentrate the development of the new production in Germany. They issued licences only under conditions which kept production abroad at a low level.

The typical case is Plexiglas, a new material with almost miraculous qualities. It is a glass-like plastic that does not splinter; it can be sawed or carved like wood and can be treated like soft metal. It is, therefore, greatly increasing the efficiency and safety of military airplanes; cockpit enclosures, transparent bomber noses, gun turrets, windshields, etc., may be made of Plexiglas. When the war began, German planes were already equipped with the new material. There was and still is only one company in America that produces Plexiglas—Rohm and Haas, Inc., of Philadelphia.

This concern, as was brought out at hearings of the Truman

Committee, was in close association with the German firm of Rohm and Haas A. G., which held the basic patents. The American and German firms had a world monopoly on Plexiglas, with an agreement on a division of the world market which made Germany the sole supplier of the new kind of glass for Europe, Africa, and Asia (excluding Japan).

The German firm was not allowed to sell Plexiglas in America. It reserved for itself, however, the right to export finished articles to all countries, including the United States and Canada. In 1935 Imperial Chemical Industries of Great Britain also received a licence under similar conditions.

A special agreement with I. G. Farben obliged the latter not to manufacture Plexiglas or a similar product, while Rohm and Haas agreed not to use their patents for the manufacture of articles which would be competitive with I. G.

This clause presented handicaps to important new technical developments. The basic material for the manufacture of Plexiglas is methyl methacrylate, a synthetic product that can also be utilized for production of artificial rubber, dyestuffs, pharmaceutical articles, etc.

The members of the Plexiglas world monopoly took great care to make it impossible for any competitor to enter the new field of production. Therefore, the patents, it is charged, did not reveal the "know-how" of production. They might possibly have been declared invalid by American courts. But patent agreements in which Imperial Chemical Industries and Du Pont participated had consolidated the patent monopoly of Rohm and Haas.

The participants in these agreements were aware that they might be accused of violating American antitrust laws. Mr. Haas wrote in a confidential report on a discussion with representatives of Du Pont (April 18, 1936):

"Copies: Mr. Haas
Mr. Kelton
Mr. Bergin
"April 18, 1936.

"REPORT—Mr. Haas

"E. I. du Pont de Nemours & Co.—Mr. Wardenburg called with their attorney, Mr. Haskell.

"We discussed the whole situation again. They repeated over and over again that there is not the slightest possibility of the I. C. I.'s coming into the American market, but du Ponts are

afraid to write a letter to this effect because in the case of an investigation of their firm by politicians, the politicians might make capital of such a statement, *i.e.*, they might attempt to point out that the world was divided up between I. C. I. and du Ponts."

American government purchases of Plexiglas included a royalty of 3 per cent for the German company. Royalty for sales to Russia was 10 per cent.

When war began in Europe, arrangements were made to continue "business as usual" and to enable the German firm to preserve its dominant position during the war. Immediately after the declaration of war in 1939, the German firm wrote to the American company instructing the latter to

"deliver the overseas markets which have been reserved for us . . . the Middle and South American States, Japan, China and Siam. . . . For the handing over of these markets you will pay us apart from the regular licence fee, 15 per cent on all sales of Plexiglas to these countries. . . .

"At the time when we will be able again to sell to the aforementioned countries you will let us have copies of all the bills, price arrangements, etc., which are necessary for us in order to get back into the business again. As far as possible, abide by the prices which are known to you."

Another war-time agreement was concluded with the understanding that the American firm give back the above-mentioned markets to the German company at the end of the war, and even pay for war-time sales a royalty of 3 per cent up to 25 per cent of the sales price to Rohm and Haas in Darmstadt.

It is apparent that the executives of Rohm and Haas in Philadelphia did not want to make any effort to develop the South American market; for they expected that the Nazi company would again be in control of the South American market after the war. For the same reason, the contractual obligations for payments of royalties were as far as possible fulfilled. The German firm received reports on sales of Plexiglas in America even after the enactment of the Lend-Lease Bill.

The reports which the Philadelphia firm sent to Germany on sales in the United States and Canada served another important purpose—they enabled the Nazi authorities to keep themselves informed on the progress of the manufacture of equipment for military airplanes in America.

CHAPTER XVII

A NEW KIND OF AMMUNITION INTERNATIONAL

PRIVATE CORPORATIONS which signed international cartel and patent agreements had to make sure that contractual obligations would be respected. German enterprises, subject to state regimentation as they were, were especially insistent on guarantees that contractual obligations concerning production outside Germany would be strictly fulfilled. Therefore participants in such international deals had to engage special experts who made certain that their commercial activities did not violate the content or spirit of the international contracts.

A. F. Greene, for instance, was a particularly conscientious patent attorney and a key figure in the Remington Arms Company, one of the biggest peace-time manufacturers of firearms. New contracts being negotiated by Remington Arms were submitted to him for approval.

Mr. Greene objected to war-time shipments of "certain revolver cartridges" which are provided with lead bullets, and of two million .38 S & W special cartridges to the government of the Union of South Africa. As a result the sale was cancelled. The same happened a few months later, when the British Purchasing Commission again wanted to buy ammunition from Remington Arms. This American firm would have been willing to sell sporting guns for hunting lions in Africa or for shooting ducks in England. But it did not permit its guns or ammunition to be used "for military purposes".

Why this distinction, apparently so strange for a large-scale manufacturer of arms? No ethical principles were involved, but only contractual obligations. Remington Arms had a privileged position in the American ammunition industry because it held a patent on tetracene. This chemical compound is used as priming composition for cartridges or as a very successful sensitizer and combustion initiator. Army men as well as hunters appreciate the invention of tetracene.

Remington was the official owner of this patent in the United States, but it did not have a free hand in making use of it because of an international agreement with the original owner of the patent, the Rheinisch-Westfalische Sprengstoff und Dynamit A. G. (a subsidiary of I. G. Farben). The latter showed consider-

able foresight when it sold its patents on tetracene to the American company under the condition that besides payment of annual royalties, no exports of "any military ammunition containing any of the priming composition to any of the countries of the British Empire" were permitted.

Therefore, Mr. Greene wrote from the Bridgeport office of Remington Arms on January 23, 1941, in an inter-office letter to the sales manager, D. F. Carpenter:

> "The further sale of tetracene-primed ammunition to the government of the Union of South Africa or to the government of Canada is most undesirable, by reason of our tetracene contract with Rheinisch-Westfalische Sprengstoff Werke".

In a later letter, on February 10, 1941, Mr. Greene informed the managers of his firm:

> "In the event that the use of tetracene in such non-corrosive priming is contemplated, attention is invited to the following requirement of our tetracene contract with Rheinisch-Westfalische Sprengstoff Werke:
>
> "Tetracene priming cannot be used in ammunition sold to the British government or to any of the countries of the British Empire".

Until 1941 the German firm was able to influence foreign sales of ammunition by Remington Arms. It had a claim on a quarter of the royalties the American firm received from licensing contracts in America. Even the United States government was compelled indirectly to pay royalties to the German subsidiary of I. G. Farben for the use of a patent that was owned by an American company.

When Hitler threatened to invade England, the American firm continued to fulfil its contract with I. G. These agreements enabled the Nazi partner to influence the manufacture and sale of ammunition across the seas. Yet Remington Arms was not a branch of the German trust. On the contrary, the majority control was and still is in the hands of Du Pont. Furthermore, there were close relations with British interests. Remington Arms and Imperial Chemical Industries of Great Britain were joint owners of a Brazilian company, Compañia Brasileire de Cartuchosa, S. A. Thus Remington Arms represented a new kind of ammunition international, owned by Du Pont, in partnership with Imperial Chemical Industries in England, yet partially dependent on I. G. Farben, a great German corporation.

This strange combination was to be kept intact. When war broke out in Europe, Remington Arms stuck to the letter of the law in honouring international agreements between itself and the corporations for the joint protection of patent rights and market control. The makers of tetracene ammunition also expected their contracts to survive the war. When Great Britain needed American ammunition to meet the threat of Nazi invasion, the American subsidiary of Du Pont was forbidden by the Nazi trust to sell ammunition, made in America, to Great Britain. Of course, this was only in accordance with the patent agreement between these private corporations. On the other hand, tetracene is not so essential for total war as synthetic rubber or oil.

"In fairness to Remington it should be stated we do not believe that Remington's agreement with Rheinisch-Westfalische Sprengstoff A. G. not to sell military ammunition containing tetracene to the countries of the British Empire has in fact operated today as a serious impediment to the Allied war effort". (Statement of Allen Dobey, Special Assistant to the Attorney-General, Antitrust Division of the Department of Justice.)

The history of tetracene is only one case among many others. It reveals how, at the outset of the World War II, the lure of privileged market positions or monopolistic control helped to establish international ties which played into the hands of the Nazi dictators.

CHAPTER XVIII

WORLD CONTROL OF MILITARY OPTICAL INSTRUMENTS

ONLY TWO enterprises in Germany or America were prepared to manufacture military optical instruments when the Second World War started. For other firms which might have entered this field of precision work would have violated patent rights of Bausch & Lomb (American, allied with Zeiss), or of Zeiss itself (German). This latter company has a world-wide reputation as a maker of photographic and optical instruments. Its products are high-quality and precision goods, relying for the most part on extremely skilled labour which cannot easily be replaced. Therefore, it is difficult to expand production quickly.

The American firm had to pay Zeiss a royalty of 7 per cent for

the first ten years (then gradually declining) on "total sales in the military line". In return, Zeiss had signed the following agreement with Bausch and Lomb: "Both parties shall, in the military line and in all other lines, where they co-operate technically within the provision of this agreement, exchange their manufacturing experience and give access to their respective manufactories to each other's confidential representatives". Who were the "confidential representatives" who were granted the privilege of close control of each other's production? In Germany, Zeiss was of course in close collaboration with the Army and Navy Command, and they could send their agents to America to inspect the works of Bausch and Lomb.

Zeiss also watched Bausch and Lomb's business activities in order to ascertain that American military optical instruments were sold only on the domestic market. The American enterprise was not allowed to export optical instruments in "the military line" to any foreign country. This was the privilege of the German firm. As a result, Zeiss was well informed all over the world on the progress of naval construction and military equipment which depended on the use of complicated optical instruments. It made quite sure that Bausch and Lomb, on the other hand, was acquainted only with conditions on the American market. Other American enterprises did not enter the restricted field of optical manufacture.

The "division of the world" assured Zeiss that it always remained in a superior position. The American manufacturer always had to restrict himself to a fraction of what was produced in Germany. For the entire world outside the United States was more or less dependent on Zeiss. The latter company could extend its industrial capacity to supply the world market, while the American industry had to limit itself to domestic sales.

Bausch and Lomb was a business enterprise which had to uphold its patent agreements with Zeiss in defence of its own privileged position in America. Therefore, the international patent and price agreements were to remain effective even in war-time. Bausch and Lomb sent reports of sales to Nazi Germany, though from 1932 these were not itemized, and Bausch and Lomb contend that these lump figures did not disclose the extent of America's armament programme. But even after the outbreak in Europe of the present war, Bausch and Lomb refused to sell to Britain or to other foreign governments, without the consent of Zeiss, instruments which could be used for military purposes.

This international cartel was broken only when the Antitrust Division of the Department of Justice intervened. S. S. Isseks, Special Assistant to the Attorney-General, pointed out in the information resulting in the indictment against Bausch and Lomb that

> "Bausch and Lomb and Zeiss had agreed to divide the world market for military optical instruments into certain geographical areas, the exclusive territory of Bausch and Lomb to be the United States of America, and the exclusive territory of Zeiss to be the rest of the world; not to sell directly or indirectly such instruments for use in the area or territory allotted to the other without the prior consent of the other; in the case of sales made by consent for use in the territory of the other, to fix, maintain, and control arbitrary, artificial, and unreasonable prices and terms of sale of such military optical instruments; . . . that Zeiss would not permit any person, firm, or corporation which was engaged, or which wished to engage in the United States in the business of manufacturing and distributing military optical instruments in competition with Bausch and Lomb, to use any of the devices, information, instruments, machinery, or equipment of Zeiss on any terms in connection with such manufacture and distribution even though such persons, firms, or corporations were ready, willing, and able to compensate Zeiss for the use of such knowledge, information, devices, instruments, machinery, and equipment, and . . . that Bausch and Lomb would not permit any person, firm, or corporation which was engaged or which wished to engage outside the United States in the business of manufacturing and distributing military optical instruments, to use any of the devices, information, instruments, machinery, or equipment of Bausch and Lomb on any terms in connection with such manufacture and distribution even though such persons, firms, or corporations were ready, willing, and able to compensate Bausch and Lomb for the use of such knowledge, information, devices, instruments, machinery, and equipment."

The international patent and price cartel of Bausch and Lomb and Zeiss had started as a commercial arrangement. Bausch and Lomb was thus enabled to escape the competition of a powerful German firm which could rely on an international reputation for quality work, and on extremely cheap skilled labour. The German firm, on the other hand, had lost its world monopoly of pre-

1914 days after the First World War. Competitive industries had arisen outside Germany, in particular in the United States. Zeiss could not turn back the wheel of history, especially after a lost world war, for it lacked financial resources. Therefore, Zeiss was in a position similar to that of I. G. Farben. But international patent monopolies became a new foundation for the reconquest of a dominant world position. These were utilized to make a bargain with a foreign partner who was granted a privileged position in his domestic market, with the understanding that the rest of the world belonged to the German firm.

We could devote many additional pages to a study of spheres of our industrial life which Nazi corporations have exploited for their own purposes. But sufficient examples have been given to show the acuteness of the problem. The question now arises, what conclusions should we draw from the evidence presented in former chapters? We shall find an answer if we study the world-wide aspects of the crisis of the patent system.

CHAPTER XIX

THE CRISIS OF THE INTERNATIONAL PATENT SYSTEM

THE CRISIS of the patent system was almost ignored before the war. Only "crackpot" inventors, social reformers, and occasionally Congressional committees dealt with it. The latter had collected an amazing amount of evidence revealing the deficiencies of the patent system and also its effect upon national defence, but the public was not alarmed, for the reports were known only to a few experts.

Most big corporations considered criticism of the patent system a serious menace to their investments. The relative stability which they had achieved was largely sustained by patents and international patent agreements. Even high-ranking military experts dealing with the problem of national defence felt helpless in their attempts to remedy a situation where strategic industries were under control of patent monopolies which impeded technical progress.

The war has finally brought out into the open the international crisis of the patent system. Patent rights sustained international agreements which divided up the world market and provided for

the strangling of strategic industries in America. The patent system forced the United States to assist in the curtailment of new technological developments vital for national defence.

Patent rights were a solid basis for international cartels of a peculiar type. The German owner of a patent controlling industrial processes could select his American partner by offering him a privileged market position in America. We have seen how German corporations could offer to sustain American domestic monopolies as part of world-wide agreements.

Is it accidental that the reverse never happened—American corporations preventing technical developments in Germany? This was impossible because the Nazi state itself was in control of private enterprises.

The Third Reich was a member of the International Patent Convention. International reciprocity was formally guaranteed.

Lawrence Langner, an eminent expert on international patent rights, praised the "democratic" constitution of the International Patent Convention before the Temporary National Economic Committee: "Forty-five countries of the world, including all of the industrial countries, are parties to that convention, and the theory behind that convention is this: that no country shall give to its own national benefits which it does not give to the national of other countries". This world-wide agreement was renewed in London in 1934.

As one of its leading members, the Nazi government was careful not to violate the letter of the International Convention. But theory and practice sometimes conflict, and those who read only the text of laws and court decisions may be easily misled.

The Nazi state could guarantee equal rights to American patent-holders in Germany, and easily avoid discrimination. But the German patent-holders themselves were not citizens who could freely act. The formal equality which the totalitarian state granted to the foreign patent holder was the equality of state-regimented individuals (or enterprises) who had to conform to the demands of the authoritarian state.

The record shows that there was not one single case where an American-owned patent was used in order to curb technological developments in the Third Reich. The latter's strategy, on the other hand, was to use American patent laws to control new technical developments in this country, or to enable American corporations to monopolize new industries. Therefore, the Final Report of the Temporary National Economic Committee stated:

"Ample testimony on cartels before the Temporary National Economic Committee and other information which has come to the committee from governmental sources indicate that the interchange of patents between American and foreign concerns has been used as a means of cartelizing an industry to effectively displace competition. The production of vitally important materials, such as beryllium, magnesium, optical glass, and chemicals, has been restrained through international patent controls and cross-licensing which have divided the world market into closed areas. As a result, the capacity of American industry to produce these materials is not adequate to meet the needs of the defence programme. The present international emergency further attests the need for a strong policy with respect to the control exercised by foreign governments and their dependent industries over American concerns through the patent system. The committee decries this situation and recommends that appropriate legislation be enacted to remedy it."

When the Second World War began, careful arrangements were made to keep most international patent agreements alive. Secret supplementary agreements were signed in order to preserve vested interests based on international patent pools. These were an important factor in Nazi strategy. In America, moreover, they became a serious obstacle to the war effort. Thurman Arnold came to such a conclusion in the Final Report of the Temporary National Economic Committee (p. 103):

"For the past two years the Antitrust Division has been investigating industries directly involved in the present national defence effort. The results of this investigation indicate that:

"1. The United States Government has been charged excessive and unreasonable prices for essential war materials as a result of agreement between domestic and foreign companies, and collusive bidding on Army and Navy contracts.

"2. Foreign companies have taken out patents and entered into cartel arrangements in the United States on essential war materials for the purpose and with the effect of blocking American development and creating serious shortages.

"3. There have been divisions of world markets by patent agreements between domestic and foreign companies which give foreign interests the right to determine where and how the American companies may sell certain military supplies.

"4. It seems probable that vital military information has been disclosed to foreign companies through the requirement of itemized descriptive royalty payments in patent licence agreements."

A long time before the Nazi air armada flew across the skies of Poland, France, and Britain, General Mitchell, the first American military aircraft expert, a lonely and unpopular figure among his colleagues, was fully aware of the new character of warfare. In 1935 he stressed the supreme importance of air power in his testimony before the Committee on Patents (House of Representatives):

"National defence is now measured primarily by air power, because a military threat against a country must be against its population and resources, not against its army and navy. A navy exerts its power through blockade. The aircraft attached to a navy are merely for the protection of the navy, not for the protection of the country. A navy acts in an indecisive theatre and is subject to comparatively easy destruction at the hands of aircraft. As long as a navy exists, of course it will have to have suitable aircraft for its own protection."

General Mitchell was especially emphatic about the fact that America's aircraft industry was not progressing as fast as those in foreign countries, in particular in Germany and Japan, where better types were manufactured. How was this possible? America had more experience in mass production of motors than any other country and seemed destined to take over the world leadership in aircraft manufacture. But patent monopolies sought protection for the *status quo* for an industry which was vital for national defence. Thus we heard General Mitchell's outcry before the Patents Committee four and one-half years before the Second World War began:

"Today, United States Service engines, the heart of our aircraft, are practically monopolized by two firms. The largest engines they make are about 750 to 800 horsepower. These are ordinary gas engines. In Europe, Diesel engines are now flying in aircraft. Gas engines up to 3,000 horsepower have been made in Europe. They have superchargers which give their service aircraft a ceiling of 35,000 or more. There is no necessity for our being left in the lurch.

If the United States would provide a personnel of public servants dedicated primarily to the development of air power, not to the Army or Navy or the Manufacturers Aircraft Association, we would get somewhere, as we have proved in the past, but it cannot be done under present conditions."

Most authorities denied the correctness of these statements until the Blitzkrieg proved that there must have been much truth in them. The delay of plane manufacture at the Brewster plant and its temporary management by Army authorities also threw new light on the hearings before the Committee on Patents in 1935. We quote from those proceedings:

CHAIRMAN: "Why is it that the Diesel engines which have been developed in this country have not been adopted in commercial or service-type airplanes?"

GENERAL MITCHELL: "On account of the manufacturers here."

CHAIRMAN: "Pooling of patents."

GENERAL MITCHELL: ". . . The people who control the engine are manufacturers of aircraft who are in the patent pool and they have about controlled the development of engines in this country."

CHAIRMAN: "Pratt and Whitney."

GENERAL MITCHELL: "Pratt and Whitney and Curtiss, the only two organizations that make any great number of service engines. If we were allowed to proceed with the experimentation we had a power engine in 1921 of 2,000 horsepower, a 2,000-horsepower engine. So we would have long ago perfected in our experimental work if it had not been stopped."

The military experts in Nazi Germany and Japan received the text of American patents and processes which were suppressed in America. Thus technical improvements were *prepared* in the United States but *applied* in Japan and Germany, which were eager customers for the latest types of American planes.

Another portion of the testimony before the Committee on Patents in 1935 is illuminating. The witness is Captain James V. Martin, of the Martin Airplane Factory, Garden City, N.Y.

CHAIRMAN: "Is Japan aware of all the patents we have, and do these organizations sell Japan their bombing planes that we ought to have and they could furnish here?"

MR. MARTIN: "Just as fast as we independents or we independent inventors can submit data to the Air Corps of the Navy, the National Advisory Committee has transmitted, and as

I was testifying to you, a man writing to me this morning, just another case of where that is done in the last two years, transmitted to the Air Trust, transmitted to the Curtiss-Wright Company, to the Pratt and Whitney Company, and the Pratt and Whitney Company, of Tokio, get it. Japan gets it directly, and our Army and Navy funds pay for that stuff, even paying for the transmission of it. Mr. Chairman, this matter is so much more diabolical as to facts than anything I have testified to before so far, that it is unbelievable. Seventy-five carloads of airplanes bought and paid for by our country were sent to Japan labelled 'furniture', 'household furniture', and this was done under the company of the Air Trust, the largest constructing company in the country, and the subsidiary of a Japanese agency, the Mitsui Company, was at one time the fiscal agent of our then enemy, Germany."

CHAIRMAN: "In other words, our taxpayers are paying for the national defence of Japan."

MR. MARTIN: "They certainly are."

Even in new industries which symbolized the beginning of a second technical revolution further technological changes were frozen. These young industries were surrounded by a thick wall of patents before the start of mass production. Outsiders were forbidden to invade the new industrial sphere and had to renounce technical changes which might have resulted in "displacement of the industry".

The radio industry was a typical case. The Chairman of the Committee on Patents reported to the House of Representatives on March 7, 1935:

> "The defendants, Telephone Company, General Electric, Westinghouse, and Radio Corporation, have pursued the practice of endeavouring to acquire or control patents covering every device or conception valuable or useful in the radio field. They have between them secured and are now the owners of or control more than 4,000 patents purporting to cover inventions in that field. Many of said patents are invalid, either wholly or in respect of some of the claims thereof, and are known and believed by said defendants to be such. Many more of said patents are of doubtful validity, either in whole or in part, and are known by said defendants to be of that character. Said patents are owned or controlled by said defendants severally, but, by virtue of the agreements between

them, have been combined as to third persons into a single accumulation or pool. This accumulation or pool said defendants have used to dominate, control, and monopolize the manufacture and sale of radio apparatus and devices in the United States.

"By agreement between them said defendants have confined and limited the granting by them, either jointly or severally, of licences to third persons to manufacture and sell under any of the patents comprised within the pool and have, with possible minor exceptions, confined the granting of such licences to licences to make and sell receiving sets and electrical phonographs for non-commercial use in homes and to make and sell electrical amplifying apparatus and vacuum tubes for use in or in connection with such receiving sets or phonographs. Likewise, by agreement between said defendants, the making of such licences has been entrusted exclusively to the Radio Corporation."

Something must be said here on the peculiar nature of patents. The Constitution of the United States stated as the purpose of the patent and copyright laws "to promote the progress of science and useful arts by securing for limited time to authors and inventors the exclusive right to their respective writings and discoveries".

The owner of a patent can decide whether and how far he will let other producers make use of his invention—in theory. For in practice a great deal of money is usually required to make a patent effective. And, vice versa, it often happens that financially strong companies can ignore the patent rights of inventors who do not possess the financial means to make their patent rights effective. The relative ease with which patent rights can be filed in the United States has also often resulted in the practice of registering shaky patents to intimidate financially weak competitors or independent inventors who cannot afford to finance a patent suit. Thus many shaky or "protective" patents have become weapons against production and against new technical developments. It is extremely difficult, and probably even impossible, to remedy this situation without changes which might make the patent system as such ineffective.

It is useful to distinguish among three types of inventions: general ideas, practical devices which make the general idea workable, and, finally, improvements which simplify production and extend the practical use of the invention.

According to the illuminating report of the National Resources Committee on *Technological Trends and National Policy*, published in June, 1937 (p. 6):

> "The idea of the invention is first conceived with some definiteness. It may then be demonstrated as a plan on paper or in the form of a model. Many years may be required before it takes concrete form. Then follows a period in which the design is constructed in a form that is workable. Improvements are then made and sales promotion efforts applied. If these two developments are successful, a point is finally reached where the invention is marketable. Only some time later does it become sufficiently sturdy, simple, and low priced that a relatively large sale is possible. The process is generally to be measured in decades and sometimes in centuries."

"General ideas" are still the contribution of individual inventors. They also often construct designs which make a general idea practical. The final stage, however, where improvements are made and the "know-how" is discovered, usually arises from the co-operative research and experimentation of many scientists, technicians, and other workers. Yet the law recognizes only one type of inventor, and the invention as the achievement of one single individual. Furthermore, the inventor who only discovers an improvement at the last stage of a new process is often able to control the practical use of the invention as if he were the sole inventor.

The discovery of important new processes, especially in the field of synthetics, or the exploitation of physical forces which are at present wasted by nature, require large-scale co-operative experimentation with huge expenditure which no single individual can undertake. Such new discoveries cannot be ascribed to one individual genius. They are the result of the co-operation of many scientists and research workers who have contributed to the new discovery.

In a war-time economy the third type of inventions is especially important. New technical devices must be derived more or less from general ideas which have already passed the second stage of practical application.

The war economy cannot utilize new ideas which may become practical only after years of research and experimentation. It is possible, however, to speed up this process. Some war-time inventions are utilized before they have reached real maturity,

causing considerable wastage of capital and often also of human lives. This also applies to "general ideas" which were known in pre-war times and which were buried in the patent files of corporations.

It is impossible to find out how many patents are "buried" because vested interests do not want to use them. There are thousands of patents which cannot effectively be used in mass production. They are held because they may become important later at a more advanced stage of technique.

The case of beryllium, with which we dealt in a previous chapter, is typical. Mr. Andrew G. Gahagan interrupted his research on this new light metal when he discovered that beryllium patents had already been filed by someone else. During the next three years he spent the greater part of his time on attempts to obtain a licence. This case illuminates the crisis of the international patent system and reveals how Nazi interests utilized foreign patent laws as part of their strategy.

Thurman Arnold stressed the existence of "umbrella patents" in his testimony before the Patent Committee: "They contain such ambiguous claims that they tend to cover an entire industry". Krupp, the German armaments firm, for instance, held such umbrella patents in America. They were utilized as a legal basis for lawsuits against Union Carbide and Carbon Corporation in order to compel this chemical enterprise to join a patent cartel with Krupp. The Nazi firm offered cancellation of the lawsuit as its *quid pro quo*.

One trend which is dangerous from the point of view of technological progress should be noted. The patent may be used in order to monopolize permanently the results of technical research. As a result, all enterprises which do not possess the patent but have merely obtained a licence, have no interest in spending money for experimentation, since the patent owner alone would profit from this. The owner of the patent centralizes and controls the research of the entire industry, thus perpetuating his monopolistic control beyond the duration of the patent itself.

Thus a number of private corporations have monopolized the "know-how" for important industrial processes. It seems to be of the utmost importance for the efficiency of the war economy to communicate the "know-how" to all enterprises which can make use of it. Therefore the "consent decrees" also provide for communication of all detailed technical knowledge to the enterprises engaged in war production. The communication of

the "know-how" to future or potential competitors necessarily weakens the relative position of the former monopolist more than the mere suspension of a patent. The latter will be made effective six months after the war; the "know-how", however, cannot be withdrawn. Therefore, corporation executives who are concerned about the future of their private enterprises are reluctant to give away technical experience essential for the smooth working of complicated processes. Standard Oil, for instance, is obliged to give without charge its "know-how" in the field of Buna speciality rubber. But an industrial enterprise must have considerable technical experience in the new industry in order to ascertain how far it has really obtained the entire detailed knowledge essential for efficient work. There is no agency which, as a disinterested third party, can effectively decide how far the "know-how" has really been communicated.

The Nazi state has tried to solve this problem in two ways. There are huge scientific research institutions financed by the government with well-equipped laboratories. They are working on tasks of special interest to the military authorities. The results of this work are made available to "the industry". Secondly, government institutions check and compare the results of experiments at private laboratories. These may be required to co-ordinate their research with other enterprises in order to discover a missing link in a new invention within the shortest possible time.

In America scientific research, even in war industries, still remains largely the task of private enterprise. Similar experiments are made in numerous laboratories. The longer the war lasts, the more it will become necessary to co-ordinate scientific research and to economize the wastage of technical knowledge and the expenditure of scarce materials caused by the unnecessary duplication of experiments.

The question arises how far peculiarities of the American patent system have contributed to the crisis.

There are considerable legal differences between patent laws in America and in Germany. These differences are, however, of less importance than the modifications as a result of different political and economic conditions.

The United States, for instance, is the only industrial country with antitrust legislation. As a result, patents have to a great extent been used as a cloak for monopolies which would otherwise conflict with the Sherman Act.

The report of the Science Advisory Board of the National Resources Committee pointed out as the main weaknesses of the American patent system:

> "There are three primary defects in the system as it stands at present, considered in connection with the functions which it is called upon to perform in a modern complex technical world. The first defect arises by reason of the issuance by the Patent Office of an enormous number of patents, many of which should never be issued, due primarily to an unduly low standard of invention. The second defect has to do with the excessive cost and delay in the litigation of patents, by reason of the present system of appeals. The third results from the difficulties met by the courts in handling scientific or technical questions without competent non-partisan assistance."

Is it accidental that patent lawyers play a greater role in the management of American industrial enterprises than in most other countries? The control of patent rights is an important factor in most industries. A relatively large number of patent attorneys have become executives in large American corporations, because one of the features of the American patent system is that it is relatively easy to obtain patents, but difficult to make them effective. This often requires expensive lawsuits which only financially strong companies can afford.

In America the structure of the old patent laws still exists during the present war, and in many cases is curbing technical progress. In strategic industries patents have been released or the patent owners have been forced to grant licences. These measures apply only to war production. A manufacturer, for instance, may use half the capacity of his plant for production of war materials for the government, while the other half of his production consists of goods for civilian use. In this case he can use the patent which does not belong to him, but which, however, has been released by a consent decree, only for half of his output (war materials). The owner of the patent may refuse to grant a licence for the manufacture of "civilian goods".

What does this mean in practice? In a war economy it becomes increasingly difficult to differentiate between goods for "civilian use" and war materials. It is obvious that both are interdependent.

The attempt to maintain the fundamentals of the old patent system has come into conflict with the war effort. Patent mono-

polies which are temporarily suspended still exert a tremendous influence because their owners expect the restoration of their "rights" after the war. Their future patent rights cast a dark shadow upon the war economy of today. The owners of these patents in suspension are able to maintain privileged positions within the war economy by withholding the "know-how". Competitors who want to employ a patented process may ask for the "know-how"; but they cannot ascertain whether they have received all technical details.

How will the conflict between the economic necessities of war and the structure of the patent system be solved? Attempts are being made to steer through some middle-of-the-way course which will facilitate a return to the old patent system at the end of the war. Pursuit of this middle-of-the-way course often clashes with the need for greatest technical efficiency.

At this stage of the war economy essential parts of the patent system are "in suspense". They are to be effective again after the war, with the result that the old patent monopolies would then be stronger than ever before, concentrating in their hands more effective control over industrial developments than in pre-war times.

A return to the past and to impeding technical progress would have far-reaching consequences. It would mean that the United States, even if it won the Second World War, would soon decline to the position of a third-rate Power unless technical progress were strangled all over the world. If we maintain or reconstitute the old system, curbing technique here, while foreign countries are not restricted or are restricted less drastically in their development of industrial techniques, then we must assume that America will soon fall far behind other countries as an industrial power.

CHAPTER XX

DOOM OF PRIVATE WORLD EMPIRES

MANY EXECUTIVES of corporations with world-wide interests entered the Second World War under the illusion that they could preserve their net of subsidiaries and international cartels. Until Pearl Harbour their business policies were guided by the idea that the international agreements which they had signed with foreign Powers would somehow survive the war.

Most of these corporations with extensive investments in areas under the control of fascist regimes emphasized that their attitude was that of businessmen who were interested only in "business as usual". This attitude has been best expressed in a heretofore unpublished letter of Alfred P. Sloan, chairman of General Motors, addressed to a stockholder under date of April 6, 1939. We quote from it in part:

"General Motors Corporation is an international organization. It operates in practically every country in the world where motor cars are used, and that, to a more or less extent, is practically everywhere, as of course you know. . . .

"Now I believe that if an international business such as General Motors engages in the commercial activity of any country with the idea of making a profit both in that country, as well as on such parts as it may export from this country, that it has an obligation to that country, both in an economic sense as well perhaps as in a social sense. It should attempt to attune itself to the general business of the community; make itself a part of same; conduct its operations in relation to the customs, and design its products so as to meet the needs and viewpoint of each community, so far as it can. I believe further, that that should be its position, even if, as is likely to happen and particularly as was the case during the past few years, the management of the Corporation might not wholly agree with many things that are done in certain of these countries. In other words, to put the proposition rather bluntly, such matters should not be considered the business of the management of General Motors.

"According to my belief, it should subscribe to that philosophy, or else it should not do any export business at all. I will go so far as to say, if it did not subscribe to that philosophy it could not do any export business, or any to amount to anything.

"Passing from the general principles involved to the case at point, many years ago, General Motors—before the present regime in Germany—invested a large amount of money in Adam Opel A. G. It has been a very profitable investment, and I think outside of the political phase, its future potentiality from the standpoint of development and profit, is equal to, if not greater than many other investments which the Corporation has made. It enjoys about 50 per cent of the business in Germany—a little less than that, to be exact. It employs German workers and consumes German materials. . . .

"Having attained the position which we have, through evolution, hard work, and, I believe, intelligent management, of approaching 50 per cent of one of the most important industries in Germany, I feel that we must conduct ourselves as a German organization, involving German capital. . . .

"It is true that we cannot, at the moment, withdraw profits accrued in the German plant and transfer them into American currency, due to exchange restrictions, therefore we do not include such profits in our operating result. But that situation is not in any sense limited to Germany. There are several other countries in which we are conducting operations in South America or otherwise, in a broad way, from which likewise profits cannot be withdrawn, hence such profits are not included in our operating results. Germany is only one of many other countries.

"The above are the reasons why I think that the policy we are following, is a sound and desirable policy; why I believe it is to the interest of the stockholders, and why I believe it is entirely consistent with the general equities of conducting a business of this magnitude with its responsibilities as I said before, in all markets in which automobiles are sold.

"What I have said above, however, probably could be summarized by stating it in principle form; viz., that an international business operating throughout the world, should conduct its operations in strictly business terms, without regard to the political beliefs of its management, or the political beliefs of the countries in which it is operating. It should, however, govern its operations, wherever they may be, in accordance with the foreign policy of the United States. That policy, and the laws emanating as a result of that policy, should be respected irrespective again, of what the political beliefs of the management might be, with respect to the question at issue.

"Very truly yours,
(signed) "ALFRED P. SLOAN,
"Chairman."

Mr. Sloan did not write off General Motors' investments in Germany when Hitler came to power because--even in 1939--he still expected the Third Reich to protect General Motors' stake and eventually to pay dividends. It is scarcely true, however, that the German investment of the American company has ever been "a very profitable investment". A. Opel, the former owner

of the enterprise, sold his stock to General Motors on the eve of the world economic crisis, when German automobile plants were running almost at full capacity. A short time later the greater part of the works was shut down, and the value of the holdings in Opel declined to only a fraction of the money (100,000,000 marks) General Motors had paid for them, Mr. Opel was the winner, and General Motors the loser. Three years later Hitler came to power. Under his regime, General Motors lost all control over its German enterprise. Even new technical developments in its German subsidiary remained unknown to the American mother company which still registered the German plant as its investment.

The foreign policy of General Motors which Mr. Sloan so clearly expressed in his letter is of great interest. He indicates a point of view with which any progressive may heartily agree. A private investment should be considered as a mere commercial affair and should not be the cause for political intervention in a foreign country. But the Nazi state is interfering with the international stake of private corporations and has succeeded in utilizing them for economic and political purposes. Financial interests which served the totalitarian state have been granted special privileges and protection.

A German author[1] enumerated ninety-seven "important" international cartels functioning in 1936, with Germany as a leading partner (total number of "important" international cartels: 128). In later years, the Nazi government showed great interest in these international cartels. Their effectiveness was sponsored by the totalitarian state. The Third Reich, for instance, was extremely active in the International Chamber of Commerce. This institution encouraged international cartels which were to curb world market competition, "stabilize" prices, "organize" markets—in short, protect vested interests and prevent early depreciation of capital. The most important function of these international cartels was to keep prices up and production down, and to support the effectiveness of private monopolies outside of areas under fascist control.

Only after Pearl Harbour did these circles finally realize that as private business enterprises they had to withdraw from the outside world and rely on their home markets. Then the question arose whether this retreat was only temporary and how they were

[1] Fritz Werr, *International Economic Combinations (Cartels and Concerns) and State as Partners*, Berlin, 1936.

to adapt themselves to the needs of the war economy. Thus Washington became a hotbed of a discussion which throws new light on the problems and aspects of the war economy. During these discussions three points of view were presented, which we may define as follows: (1) for a return to "business as usual" policies, or for private enterprise with full rights to organize patent pools, international cartels, and other restrictions against production; (2) for a return to "free enterprise" but with special restrictions against private monopolies and private world empires that circumvent the power of the national state and impede free competition; (3) for state supervision of large-scale enterprises that control economic key positions and for national planning which enables the use of "idle capital" in production.

This discussion where the above three points of view were expressed has not dealt with a question which arose in most monopoly cases and patent pools--the world-wide implications.

The Nazi state has tried to find an international solution by exterminating all national states and establishing the domination of the entire world by one single state. This attempt will not succeed. The totalitarian state is doomed. We may conceive that the victorious Powers will try to make certain that the German state never rises again to resume the struggle for world empire. It is, however, doubtful whether even if Germany is divided up and prevented from surviving as a national state the international power struggle will be ended.

It will not be sufficient to cripple German industrialism in such a way that it cannot challenge the foreign world again. The result would, of course, be a decay of industrialism in Central Europe. As a consequence we would then probably witness a new mass migration of engineers, chemists, and highly skilled workers who would not remain in a starving Germany that did not need their knowledge and their labour. They would seek new homes in countries where they could utilize their technical skill. They would be received with open arms in India, China, Latin America, and others of the "young" countries, which offer a virgin field for completely new industrial developments without the curbs created by an outdated industrial structure and vested interests which own patent rights or monopolize technical experiences in their own countries.

This grave danger would have to be faced by the United States if it returned to a *status quo* where only slow technical changes are made. It could then maintain its dominant world position

only if the second industrial revolution, heralded by light metals and the new synthetic processes, were strangled all over the world. Such a policy would require permanent occupation by military forces of all key positions in the world and the support of foreign dictatorships which would stifle the growth of new industries and of new techniques. But what guarantees could be given that such dictatorships would not repeat the example of Hitler and rearm, at first secretly and then openly challenging the old world powers?

Thus return to the *status quo* for industry would not mean return to an era of peace. On the contrary, huge armies and military expenditure on an unprecedented scale would become permanent peace-time affairs. Under such conditions, private enterprise would have to expect regimentation and state regulation even after the war, for otherwise the attempt to "stabilize" world economic conditions and protect private monopolies at home and abroad would inevitably fail.

These are consequences often not visualized by the "back to normalcy" group.

There is little chance that the prospects we described above will become a reality. Other countries and continents have already tasted too many fruits of modern industrialism and are insisting on their right to develop them freely in their own interests. They have come far from the backward stage of fifty years ago. They have been dragged from their economic isolation into world wars and have been shown new worlds of technology. The logic of the situation will force them to use the new industrial techniques to climb from the misery into which they have been plunged by war and to reach the highest stage of social and technical organization.

It is absurd to imagine that international patent laws and cartel agreements will be able to cope with these so-called backward nations. Not all the force in the world will hold back their will to live.

The second alternative presented in the discussion of international monopolies and patent agreements does not lead to more hopeful prospects.

Thurman Arnold, Assistant Attorney-General of the United States and head of the Antitrust Division of the Department of Justice, made himself very unpopular with big corporations by his indictments of leading companies for monopolistic conspiracies in violation of the Sherman Act. He believes that his

fight against the monopolies will help to reconstitute free competition after the war.

"There is a very fair chance", wrote Thurman Arnold in *Democracy and Free Enterprise* (p. 67), "that the great effort of the war is going to force so many people into production of things useful alike in peace or war that it will be impossible to maintain the cartels' domination in the face of the vast productive plants which will be built.

"To make this hope come true we need to continue during the war the long-run economic policy of the Sherman Act—to prevent existing private groups from getting sufficiently into control of our vast war production to shut it down when the war is over. Their efforts to get that control today are unceasing. For example, in magnesium, plastics, glass, synthetic rubber, machine tools, glass containers, military optical instruments, acetic acid, nitrogen, beryllium, dyes, all substances useful in peace, the Antitrust Division finds that through the failure to use, or through the improper use, of patents, production has been retarded, patents have been pooled or exchanged subject to revision, or arbitrarily withheld from use, all for the purposes of creating a dominant position in the industry and in some private groups building a Maginot Line around the industry to protect it from new enterprise."

In answer to a question I asked him during an interview, "How can you expect to return to the old stage of free competition in our era of advanced mass-production technique?" Mr. Arnold expressed his belief that he can arouse public opinion on his side to stamp out monopoly control over production and to revive free enterprise with its expansive forces. Once monopolistic obstacles were removed the expansive forces of free enterprise would promote a technical revolution all over the world which would usher in a new era of prosperity. Mr. Arnold also expressed the view that we are moving in long cycles. After the rise of monopoly power growing out of the old technique, we enter a new cycle where free competition is the vehicle of the new technology.

Most of Thurman Arnold's critics have pointed out that he wants to turn back the wheel of history. Such an interpretation overlooks the world-wide implications of his theory that formerly backward countries could or should be industrialized under a system of private enterprise.

This vision of Thurman Arnold finds a parallel in ideas of

Oswald Spengler in Germany. The author of *The Decline of the West* also believed in new industrial revolutions in formerly backward countries, which would use the industrial technique of the West in order to turn against their former masters.

"Something terrible is happening. In 1880 coal deposits which were exploited existed only in Northern Europe and Northern America. Now they have been discovered and exploited all over the world. The coal monopoly of white labour has come to an end. Furthermore, industry has to a great extent freed itself from its dependence on coal through water power, oil, and electricity. Coal (and electrical energy) can migrate and they are doing it, everywhere away from the areas from white trade-union dictatorships to countries with cheap labour. . . . The flight of the highly developed industrial methods to the coloured peoples is expanding, and the white luxury wages are becoming mere theory because this labour is not needed any more."[1]

Under conditions of free competition the formerly backward countries have obvious advantages over the old industrial world of the White Man. They can apply the latest achievements of new technique without being burdened by the weight of an out-dated industrial structure. They have an abundance of cheap labour which can quickly master the new techniques.

Spengler's conclusion was that the industrial competition of formerly backward countries, especially of Asia, would force the Western countries to defend their competitive strength by compelling the masses to give up their relatively high social level. Wages of white skilled labour must be cut in order to avert the fact that the White Man's production becomes too expensive and cannot compete with the newly industrialized Asiatic world. Spengler's pessimism is countered by Thurman Arnold's optimism, but both derive their views from the same basic idea that new industrial revolutions will occur all over the world, spreading and reviving world economic competition.

There is a third group which seeks a different solution for the problem of private monopoly control. It is represented by those New Dealers who believe that the state should take over essential monopolies such as transport, utilities, and perhaps even iron, steel, and coal industries. At the same time the state is to increase spending and utilize "idle capital", thus guaranteeing full employment and a buying power for the population sufficient to absorb all consumption goods.

[1] Oswald Spengler, *Jahre der Entscheidung*, Munich, 1933, p. 122.

The social-planners-on-a-national-scale also ignore the rest of the world. They are not concerned about the fact that our industrial technique was more or less moulded by an international division of labour with industrial countries as centres of world empires, and that the dissolution of the old order results in a crisis of industrial technique which needs a new world-wide foundation. Any attempt to find a solution of our social and economic problems on a merely national basis does not recognize that the end of the old international division of labour would not end the dependence of national planning on developments in the rest of the world. It was not accidental that everywhere national planning as a "social experiment" ended in armaments races and militarization. We may expect that the same will happen again if the further development of technology and of the industrial strength of a country depends on investment policies of national states.

A return to "free enterprise", on the other hand, would enable private monopolies to curb or eliminate competition with the result that technique would suffer stagnation. Some economists have approved this "control" or slowing-down of technical progress because the preservation of the old techniques permitted the use of old machines until they became scrap iron. There was no waste of capital that had prematurely to be replaced. Thus private monopolies could reduce their rates of amortization for the old capital and economize on costs of production. Greater competitive pressure, on the other hand, enforced quicker replacement of the old capital, a rise of amortization rates and of costs of production. From the point of view of the private investor it therefore seemed irrational to introduce technical improvements which reduced the value of the capital. A new invention which enabled us to produce more goods at lower costs did not pay if old values were greatly affected by it.

But the observation of the accountant does not necessarily indicate real waste of human efforts. It is possible for old technical implements to lose their investment value and remain physically in existence. They may be utilized for further production, though they represent only a fraction of their old values. A private corporation which has written off old investments may still utilize them in production. Then a decline of costs of production may be registered because there are no funds to be set aside for amortization. In either case, liquid capital that seeks reinvestment is accumulated.

As a result, a paradoxical situation arose. Private corporations whose monopolistic control of an industry enabled them to reduce amortization rates, accumulated huge liquid funds which had to be reinvested. The abundance of liquid capital should have facilitated the financing of new ventures based on the utilization of progressive techniques. But the investment policies of these private monopolies were based on the principle of restricting technical changes.

Thus we witnessed a growth of "self-financing", especially of corporations which profited from the restrictions of competition during and after the depression. They needed less capital for reinvestment while they accumulated more funds—which, in turn, enabled them to invest more capital.

This problem has been modified under wartime conditions. All enterprises engaged in production of war materials are able to amortize their capital at a quicker pace than ever before. Their liquid funds must be reinvested or are absorbed by the state, which enforces the construction of new works and industries. Are they mere emergency plants to be left idle after the war, or do they mark the beginning of a second industrial revolution?

The attempt to delay quick technological changes may cost millions of human lives. It may result in losing battles and even the war. From this point of view it is necessary to be prepared for radical changes in technical methods, without consideration of patent monopolies or vested interests, and without any other restrictions against beginning a second industrial revolution.

CHAPTER XXI

THE SECOND INDUSTRIAL REVOLUTION

TOTAL WAR has initiated many technological changes that would have been impossible in pre-war times. Before the present war the idea of a second technical revolution seemed to be a dream which might become reality only for later generations. The revolutionary consequences of the progress in chemistry, physics, and electricity were already being discussed, but a new technology seemed to be mere vision. The deadweight of the old industrial structure discouraged quick technical changes.

During the two decades between the First and the Second

World Wars industrial technique did not stand still. Everybody knows about the rise of America's automobile industry. Each year a new car model appeared on the market with different colours and more attractive accessories. Other industries showed similar developments. The production of many articles which before had been turned out only for luxury consumption reached the mass-production stage. Though many corporations spent considerable amounts of money for experimental work and research, especially in fields where competitors might be expected to make quick advances, the progress did not begin to correspond to the inherent possibilities of the situation. The old industrial superstructure was slowly modified without startling new inventions which would have revolutionized traditional methods of production.

Charles N. Warner quoted the late Dr. Reginald A. Fessenden, America's foremost radio physicist and inventor, before the House Committee on Patents in 1935:

> "The greater the contribution, the more certain is it to be denied recognition by the entrenched corporations and their servile laboratory staffs. And the lack of such recognition, coupled with the lack of properly developed models to convince by demonstration those who cannot understand technical presentations, explains the shameful spectacle of every single one of the world's great inventions having been forced to lie idle until outside competition had forced their adoption despite the cunning and conspiracy of the great corporations in that field—and often only after the inventor was no longer here to receive his due reward."

Professor Fessenden was a first-rate radio pioneer who sued the American Telephone and Telegraph Company, Radio Corporation of America, General Electric Company, Westinghouse Electric and Manufacturing Company, and the United Fruit Company for infringement of his basic patent on the Heterodyne principle. This group had formed a monopoly to control wireless and wire apparatus in the United States, according to Professor Fessenden's complaint. The suit was settled out of court—it is reported by a payment of more than $5,000,000 to the inventor.

In his autobiography Dr. Fessenden summarized categorically the first law of invention:

> "No organization engaged in any specific field of work ever invents or adopts any important development in that field until forced to do so by outside competition."

Mr. Warner gave a short summary of the fate of important inventions before the Committee on Patents (1935). First, the telegraph company refused to recognize the work of Field, even after his first cable had been laid. Second, the telegraph and cable companies did not accept the telephone when it was offered to them by Bell. The late J. Pierpont Morgan and officials of the Western Union Telegraph Company, together with their engineers, after a demonstration by Mr. Bell, in which Mr. Morgan acted as spokesman, said: "Mr. Bell, after careful consideration of your invention, while it is a very interesting novelty, we have come to the conclusion that it has no commercial possibilities". Third, the telegraph, cable, and telephone companies did not accept the wireless telephone for a long time after it had been offered to them for $250,000. Fourth, the balloon tyre was offered to every tyre company in this country in 1914; it was not adopted till 1926. It is said that the chief engineer of one of the big rubber-tyre manufacturers lost a $25,000-a-year job because he turned it down.

As a kind of curiosity scientists were maintained in universities and in laboratories, working on "problems of the future". Was it mere accident that their investigations were often so far removed from the earthly scene that they could not become dangerous to conservative interests clinging to the *status quo*? In feudal times, too, the super-lord or absolute monarch sometimes engaged scientists and skilful artists on experimental work which often resulted in the creation of instruments anticipating later industrial developments. But they did not change technical or social conditions of the country; the new machines were only toys for the king.

The pre-war society contained technically progressive forces side by side with conservative forces which wanted to put new techniques into chains. The brakes which impeded quick technological advances were lifted only when total war made radical measures for the increase of production and for the creation of new types of materials or machines vital for national defence. Then suddenly we became aware of the fact that technology had progressed only at a snail's pace during the two decades which preceded the war.

It is possible to utilize the technical heritage of the past in order to build up the technical basis for a new future. This may be employed for better or for worse. It may be used to build up co-operative society with a technology which raises human values and individual life to a higher level, or an authoritarian dictator-

ship, or to create a militaristic state. History must make a turn in one of these directions. The present status of technology has opened the road to new techniques which may be modified in many ways, subject to social interests and power groups. The decision cannot be made according to blueprints of a bureaucratic agency, nor is it subject to a mere vote of a new "League of Nations", or the will of a leader.

Total war has become a gigantic technical and social experiment. It has supplied us with the proof that we are able to perform quick technical changes in line with a changed structure of society. Such changes can be initiated by private corporations, by planning boards, by government agencies or pressure groups, by democratic institutions, or by authoritarian leaders. Of course, each of these institutions represents different social groups and interests which modify the character and the extent of technological changes.

If America offers assistance to new plans for world economic co-operation and industrialization that does not create new competition and rivalries, the social forces abroad supporting such a plan would be immensely encouraged. We shall not offer a blueprint for a new society but will endeavour to show how new techniques are dependent on a new social order.

The first point which must be stressed is that we have reached a stage of technique where we have the means to create a new industrial structure within a relatively short time. We can utilize the old industrial capacities in order to construct factories, laboratories, and pilot plants and to open up new forces of production. This development may be curbed or stimulated. But we are not free in our choice either as individuals or as a national group. We are subject to world conditions which no single country, no social group, and no individual can ignore.

The second point which must be stressed is that we may insist on a return to free competition or we may reorganize society according to national plans with state regimentation of economic life, or we may create a new social order based on the co-operation of communal, regional, and international co-operatives. Whatever path we follow, we must be aware of the fact that developments in the rest of the world will vitally affect our own destiny.

A national economy cannot exist as a self-sufficient unit unaffected by events abroad. Therefore, the idea of the formation of "geopolitical blocs" in which countries or entire continents cease to be parts of a world economy and can develop their areas

in complete independence is an illusion. The same applies to the idea of a "managerial revolution" where a state bureaucratic "managerial class" organizes some kind of national socialism or a national trust according to a blueprint for a new society.

Those who espouse the cause of the managerial revolution, expecting the "new order" to come in the form of an autarchic state under the guidance of the industrial planners and directors, have overlooked the fact that their state cannot rise above the structure of the international power system. The logical consequence of the rise of autarchic states is that instead of price struggles we would have "power struggles" between states, with the result that national planning will always end in a new armaments race.

The third point to be taken into consideration is that the foreign world is as much dependent on the social and technical changes in our own country as we are dependent on them. It is impossible that a new industrial revolution be promoted at home without a profound reaction abroad, causing the political and economic leaders in other countries to modify their plans for their countries accordingly. This does not mean that one single country will be able to mould or regulate the entire world, but that the whole globe is now interdependent.

The various possibilities for the new development of technology are not mere abstract ideas. They will be presented and implemented as the programmes of various social interests.

Technically it is possible to create a new industrial system with utter centralization of power or a system where authoritarian power disappears, and where industrial world centres which were necessary for the old technical structure become of minor importance. Europe's industrial labour and technical intelligentsia, for instance, must be prepared to initiate the reconstruction of an entire continent on the basis of a new technical revolution, with co-operatives which run industries and eliminate the imperialistic power struggle and enable the highly industrialized countries to exist and to progress on new lines without "agrarian hinterland" or countries and continents which are mere raw-material suppliers.

We find ourselves at the end of one era of industrial technique and of a world order which concentrated modern industry at a few world centres. But we have not yet evolved the new era, for the old technical structure still prevails.

Patent pools, cartels, private world empires, and corporate interests which are opposed to the removal of restrictions against

the new technical revolution have been "suspended" during the war. But their structure exists, often retarding the technical changes which might enable us today to bring the war to a quick end, and which may pave the way tomorrow for a new social order.

America is capable of developing and applying new technical processes or inventions on a greater scale and more rapidly than any other country in the world.

In the total war it has become necessary to eliminate obstacles to technical creativeness and to remove the fetters of production which are heritages of the past. The removal of these obstacles will create a vacuum into which the forces of the future or of the past must rush.

APPENDIX

FROM STANDARD OIL'S STOCKHOLDERS' MEETING, 1942

(From the stenographic report of the annual meeting of Standard Oil of New Jersey held on June 2, 1942. The questions were asked of W. S. Farish, president of the Company, by Howard W. Arnbruster, representing a minority stockholder.)

A PROXY HOLDER: Would you or the other officers of the company desire to state to this meeting when you first became convinced or suspicious that the activities of the German I. G. Farben in its relationship to Standard Oil of New Jersey were hostile to the national security of the United States? At what time did you first become suspicious of that fact?

MR. FARISH: That is a hard one!

COMMENT: It is very simple, Mr. Farish.

MR. FARISH: I can't answer for anyone else, but I can tell you that as late as the summer of 1939, their representatives were here with samples of rubber, trying to get the people in the rubber companies in the United States interested. So from my own point of view, I never had any idea that the I. G. Farbenindustrie, as an organization, was hostile to the United States.

QUESTION: Have you any such idea now? I am asking the question. If you don't care to answer it, it is perfectly all right; you are within your rights.

MR. FARISH: I imagine today, being Germans, they are hostile, certainly.

QUESTION: You are willing now to admit that their desires are hostile?

MR. FARISH: Naturally.

QUESTION: But you had no information or suspicion previous to Pearl Harbour that they had any hostile intentions, is that your answer?

MR. FARISH: No, that wasn't your question.

QUESTION: What is the date when you became suspicious of their intent?

ANOTHER STOCKHOLDER: You are not here to be cross-examined, Mr. Farish.

MR. FARISH: I don't think the question is proper. I have tried to answer it in the spirit in which it was originally put.

COMMENT: You don't care to answer the question? That is satisfactory.

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